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Vol. II

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1937

No. 72

**CROWN CORK & SEAL COMPANY, INC.,
PETITIONER,**

vs.

FERDINAND GUTMANN CO., INC.

**ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT
OF APPEALS FOR THE SECOND CIRCUIT**

PETITION FOR CERTIORARI FILED MAY 20, 1937.

CERTIORARI GRANTED OCTOBER 11, 1937.

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SUPREME COURT OF THE UNITED STATES

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PETITIONER,

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VOL. II

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[fol. 775]

PLAINTIFF'S EXHIBIT No. 29

May 13, 1935.

Gross Sales Glazed Paper Spots

All figures in units of one gross (144 crowns).

Year	Glazed Paper Spots	Soft Drink	Percentage of Paper Spot Crowns to Total Shipments of Soft Drink (Bev.) Crowns
1928	61,681	28,979,457	.0021
1929	710,522	27,139,391	.0262
1930	2,093,936	24,430,551	.0857
1931	1,964,314	20,614,040	.0953
1932	1,544,536	14,861,741	.1039
1933	1,417,320	17,148,333	.08265
1934	1,027,507	15,809,990	.0650
Three months Period 1935:			
	269,463	3,613,469	.07457

[fol. 776]

PLAINTIFF'S EXHIBIT No. 30

May 17, 1935.

Record of Purchases of Several Important Customers Who
Formerly Used Natural Cork Crowns and Who Adopted
Glazed Paper Spot Crowns

All figures in units of one gross (144 crowns).

Year	Crowns Natural Cork	Crowns Glazed Paper Spots
1925	505,816	
1926	821,671	
1927	801,006	
1928	944,677	36,110
1929	478,168	637,783
1930	15,095	1,125,753
1931	408	701,270
1932		526,372
1933		389,369
1934		272,301

[fol. 777]

PLAINTIFF'S EXHIBIT No. 31

May 13, 1935.

Natural Cork and Glazed Paper Spot Crown Sales

All figures in units of one gross (144 crowns).

Year	Glazed Paper Spots	Natural Cork Non-Spot
1923		3,798,163
1924		3,426,137
1925		4,993,638
1926		4,749,878
1927		3,264,053
1928	61,681	3,830,463
1929	710,522	2,835,685
1930	2,093,936	1,422,774
1931	1,964,314	861,482
1932	1,544,536	470,174
1933	1,417,320	749,487
1934	1,027,507	910,196

[fol. 778]

PLAINTIFF'S EXHIBIT No. 32

May 13, 1935.

Natural Cork Crown Sales

All figures in units of one gross (144 crowns).

Year	Natural Cork Non-Spot
1917	17,298,539
1918	11,665,016
1919	8,468,137
1920	12,732,982
1921	3,160,784
1922	5,287,212
1923	3,798,163
1924	3,426,137
1925	4,993,638
1926	4,749,878
1927	3,264,053
1928	3,830,463
1929	2,835,685
1930	1,422,774
1931	861,482
1932	470,174
1933	749,487
1934	910,196

[fol. 779]

PLAINTIFF'S EXHIBIT No. 33

May 13, 1935.

Spot Crown Sales

All figures in units of one gross (144 crowns).

Year	Tin Spots	Aluminum Spots	Glazed Paper Spots	Percentage of Paper Spot Crowns to Total Shipments Of Soft Drink (Bev.) Crowns	Total
1923....	168,480	.....	.....	.....	168,480
1924....	83,251	.....	.....	.....	83,251
1925....	101,680	.....	.....	.....	101,680
1926....	53,140	39,510	.....	.....	92,650
1927....	60,122	420,597	.....	.....	480,719
1928....	103,670	646,856	61,681	.0021	812,207
1929....	90,210	1,027,547	710,522	.0262	1,828,279
1930....	124,081	1,420,548	2,093,936	.0857	3,638,565
1931....	109,250	1,772,761	1,964,314	.0953	3,846,325
1932....	87,395	1,990,410	1,544,536	.1039	3,622,341
1933....	117,709	7,860,245	1,417,320	.08265	9,395,274
1934....	146,448	7,005,151	1,027,507	.0650	8,179,106
Three Months Period 1935	26,146	1,604,374	269,463	.07457	1,899,983

PLAINTIFF'S EXHIBIT No. 34

May 17, 1935.

Record of Purchases of Several Important Customers Who
Formerly Used Natural Cork Crowns and Who Adopted
Aluminum Spot Crowns

All figures in units of one gross (144 crowns).

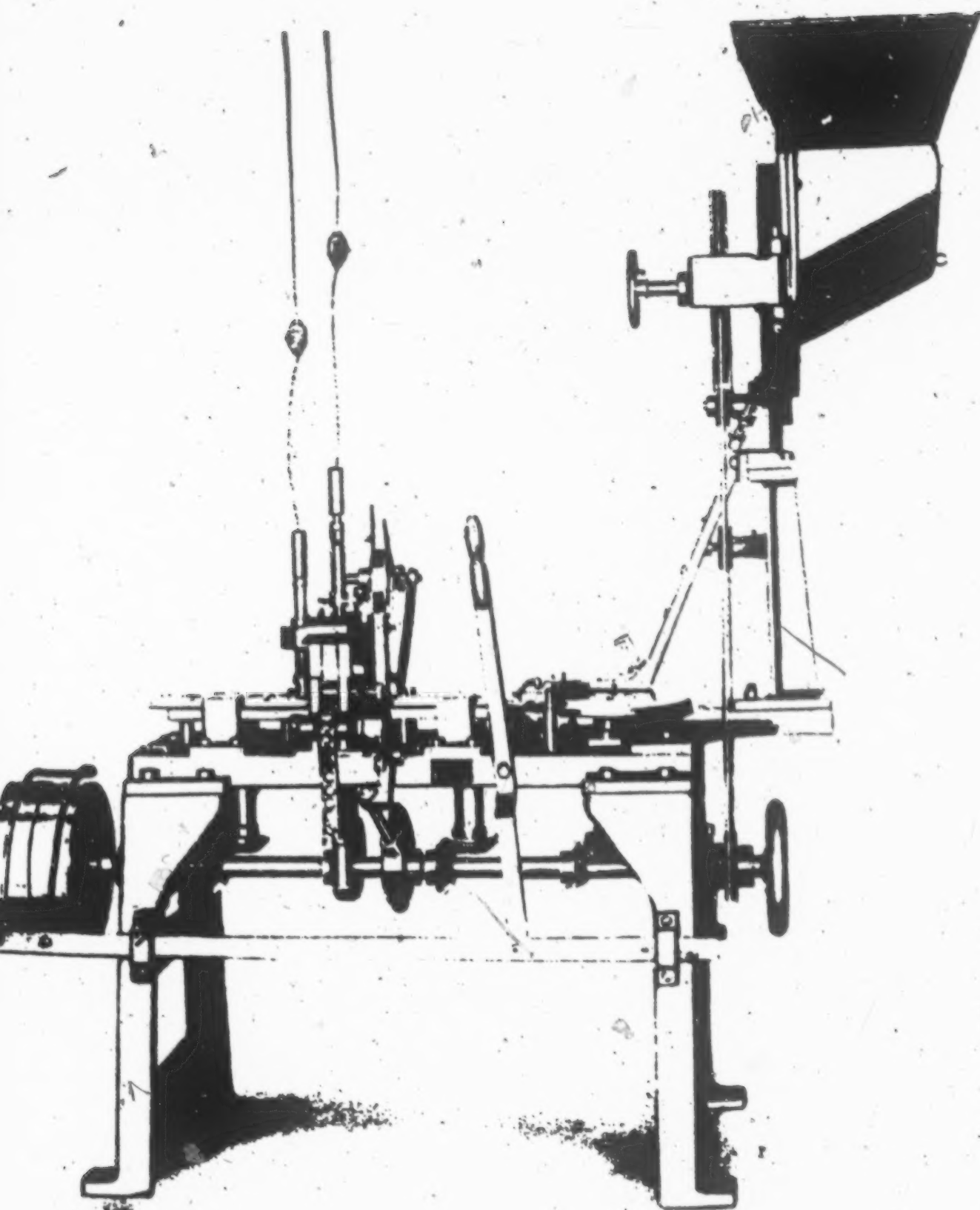
Year	Crowns Natural Cork	Crowns Aluminum Spots
1925.....	744,213	.....
1926.....	574,100	.....
1927.....	67,384	367,263
1928.....	120,163	10,053
1929.....	272,670	262,025
1930.....	200	194,315
1931.....	35,598	279,638
1932.....	600	255,831
1933.....	4,998	1,423,235
1934.....	680,877

(Here follows 1 drawing, side folio 780)

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PLAINTIFF'S EXHIBIT No. 35



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[fol. 781] PLAINTIFF'S EXHIBIT No. 36

(Letterhead of A. Johnson Machine Works)

October 5, 1928.

Armstrong Cork Company, Lancaster Cork Works, New
Holland Avenue, Lancaster, Pa.

Attention Mr. John A. Farmer, General Manager

DEAR SIRs:

I received your letter of October 2nd, and was glad to hear from you.

I have now made some changes on the Tin Foil Machine, inasmuch as I have installed a drum with twenty-four punches on same, as I can see that the crown has to be held under pressure after the tin foil is inserted in order to make a good job. I am now working on making some changes on the heating units. I have received some special ones which are guaranteed not to burn out, and now I have to see what I can do in regard to not having the tin foil discs stick to the punch. I expect to have the machine ready sometime next week, and then I will write you at once how it is running.

With best regards, I remain

Yours very truly, A. Johnson Machine Works, A.
Johnson.

AJ: WL.

[fol. 782] PLAINTIFF'S EXHIBIT No. 37

(Letterhead of Armstrong Cork Company)

April 20th, 1928.

A. Johnson Machine Works, 251 Lee Avenue, Brooklyn,
N. Y.

GENTLEMEN:

Kindly let us know by return mail how soon you can ship us a machine for aluminum and tin foil spotting Crowns. We understand the price is \$1500.00. We presume the ma-

chine is sold with the understanding that it must satisfactorily do our work.

Very truly yours, Armstrong Cork Company, Crown Division. John A. Farmer, General Manager.

JAF:E.

April 24, 1928.

Armstrong Cork Company, New Holland Avenue, Lancaster, Pa.

Att. of Mr. J. A. Farmer

DEAR SIR:

I received your letter of April 20, in regards to a Tin Foil Lining Machine.

[fol. 783] In answer to same I want to state that I have got one of these machines ready and also the Winding Machine to stick the Gutta Percha Lining, to the foil. The price on the two machines together is \$1500.00, but I have heard that McManus claims to have a patent on sticking the tin foil to the corks with adhesive.

I do not know if it is so or not, however, I asked McManus to send me the patent papers or the number of the patent so that I could secure one of the copies as I do not think that there is any patent on same as I know some concerns that have been making them for years, but I want to find out first as I do not want to infringe on anybody's patents.

I could send you this machine with the understanding that if it should be patented I would have the right to call this machine back or if you would wait until I have got the copy of the patent. You can let me know which way you would want me to do with same.

Yours very truly, A. Johnson Machine Works.

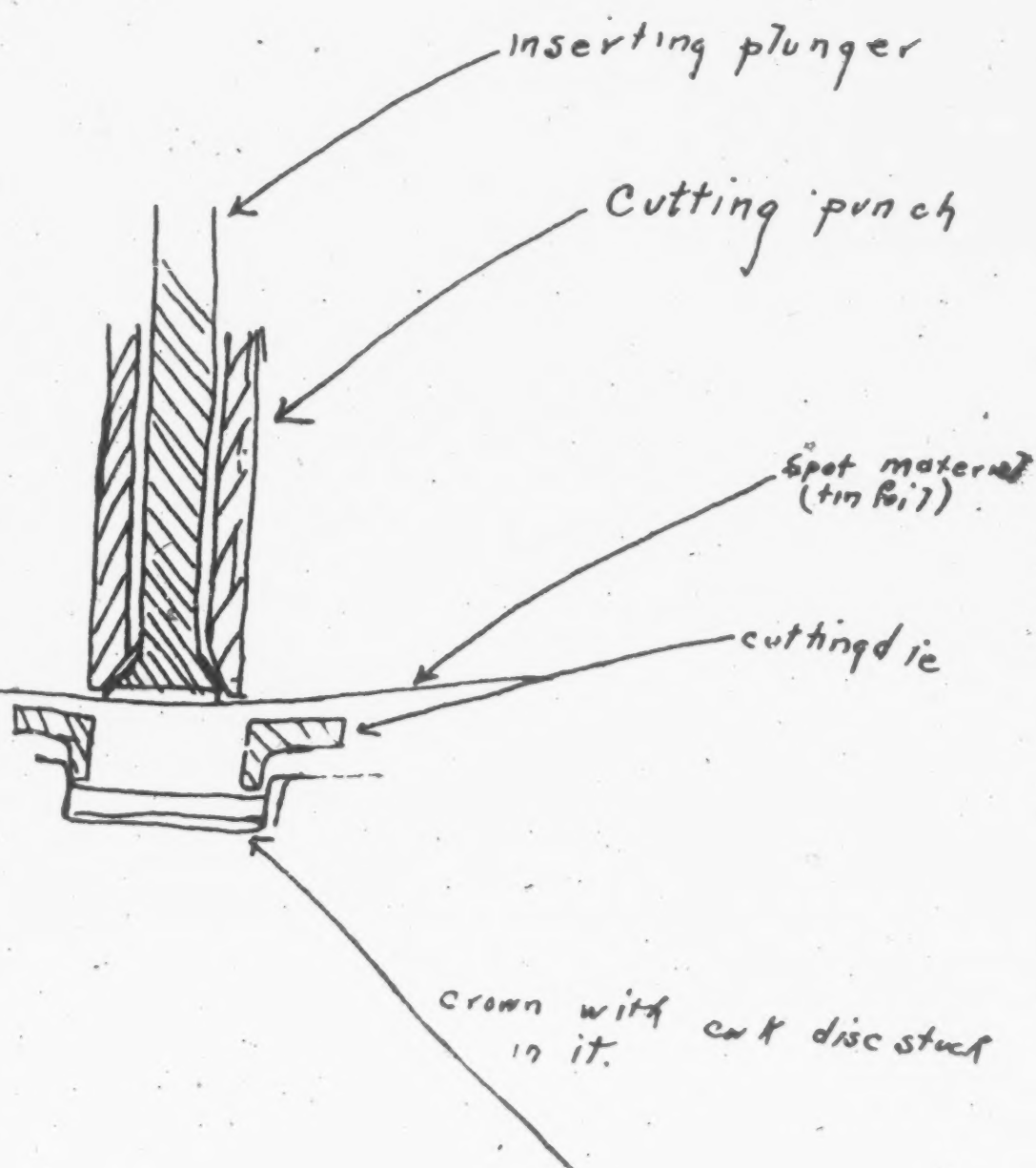
AJ/LN.

(Here follows 1 drawing, side folio 784)

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PLAINTIFF'S EXHIBIT No. 38



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[fol. 785]

PLAINTIFF'S EXHIBIT No. 39

Cable Address "Namtug" New York
Telephone Connection

Ferdinand Gutmann & Co.

New York Salesrooms
132 West 42nd St.

Sold to Inecto, Inc.,
35 W. 46th St.,
New York City

Terms:

Payable in N. Y. Exchange.

Goods shipped at purchasers' risk.

Address all Mail to Our Main Office and Factory
Bush Terminal No. 19 Brooklyn, N. Y.

Shipped to

May 13, 1925
Via

For experimental work for insertion of tin
centers in "B" Caps, with gutta percha,
slotting cork, etc.

475 00 475 00

All Prices Subject to Change Without Notice.

All claims must be made within five days from receipt of
Goods.

PLAINTIFF'S EXHIBIT No. 40

May 9th 1925.

Mr. L. A. G.

Subject—Inecto

Jesse reports to me that he had a length-session with their
Mr. Evans and had the cost of experiments as well as in-
creased cost of producing both "A" and "B" type of caps,
due to the fact that they are taking considerably reduced
[fol. 786] quantities from a contract of 10,000,000 and have
now been compelled to reduce their capacity to 4,000,000
and all we can count on with safety is quantities to be
3,500,000 to 4,000,000.

It seems that Benno had this subject up with Jesse for some time and upon Jesse's suggestion Benno gave him an itemized statement of cost of experiments as per memo attached which amounts to a total of \$619.91. As Mr. Evans is not unwilling to pay us for the experiments a reasonable amount, he naturally feels that he must take this up with his associates and therefore asks for a bill of particulars which however he positively promised to recommend for payment.

Jesse and I are both of the opinion that we ought not to make this bill any more than actual cost, especially in view of the fact that they are willing to meet us on an increase of price over and above the contract price due to the reduced quantities they are now compelled to take, which reduction is largely due to the fact that as a result of leakage and general poor results of their closure, the trade has fallen off.

Please note that according to Jesse's agreement with Mr. Evans the next shipment which we will make during the coming week is not to be billed at the old prices but Jesse is going to try to pass the bill through at the price they have discussed, namely, \$2.50 per thousand instead of the agreed price of \$1.85 plus \$1.15 for the foil liners in all the "B's."

Invoices—If upon rechecking the inclosed statement with Benno you and I agree that same is to stand this bill together with the bill for the next shipment is to go to Jesse and not direct to the office of the Inecto Co.

FG:MMG.

(Here follow 3 photos, side folios 787-789)

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PLAINTIFF'S EXHIBIT NO. 41



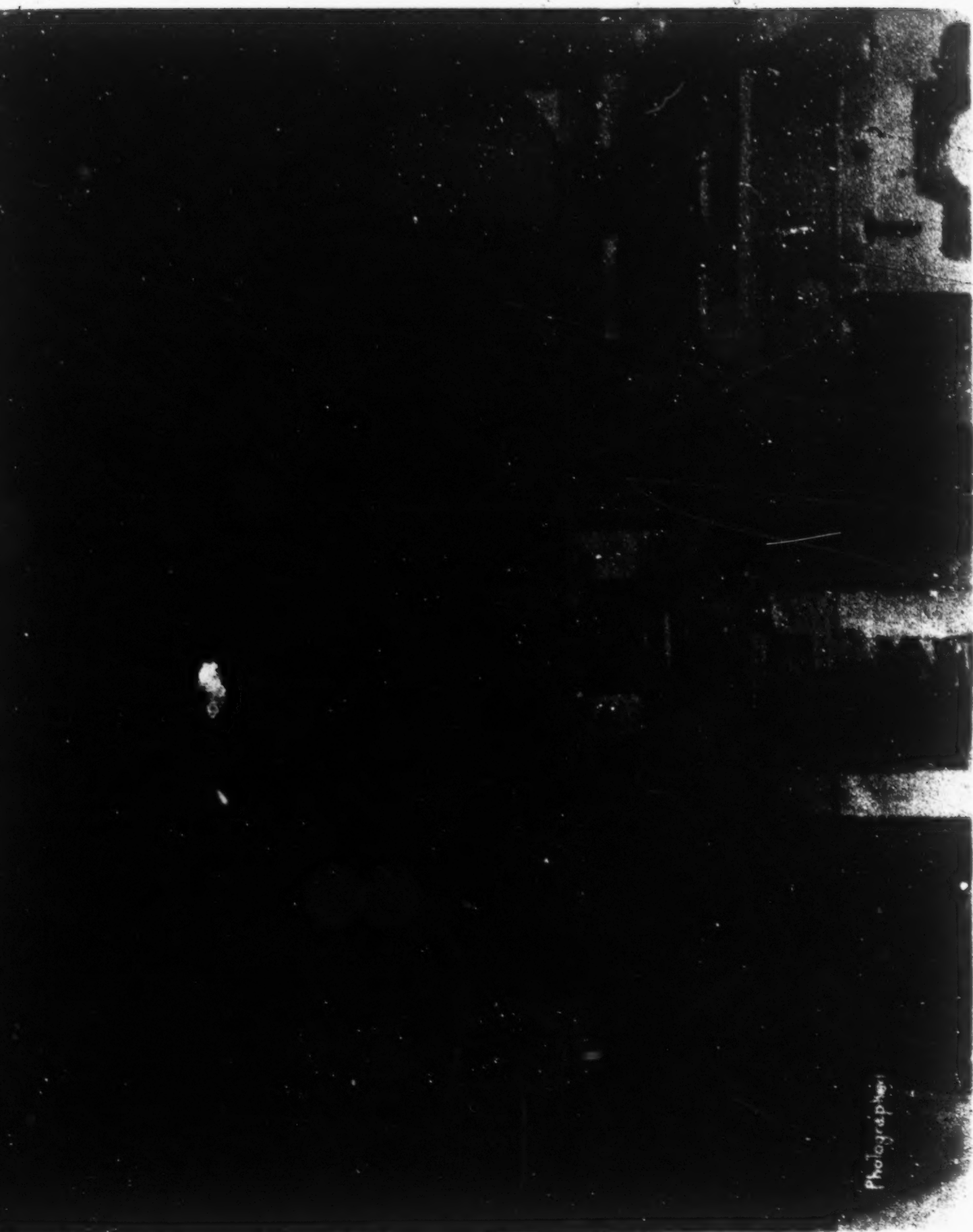
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PLAINTIFF'S EXHIBIT No. 42



Photographer

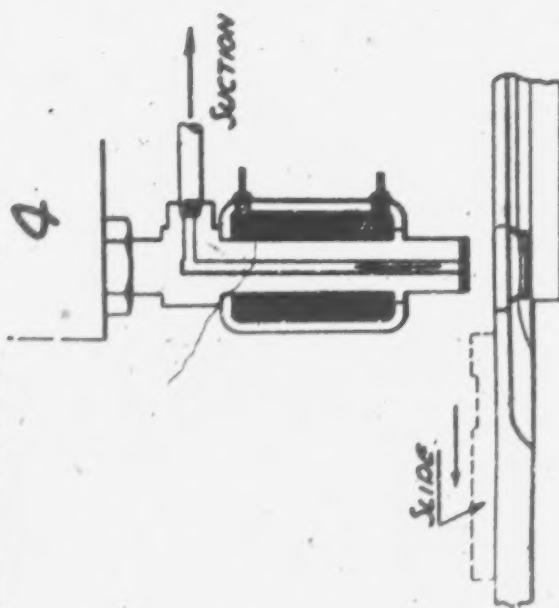
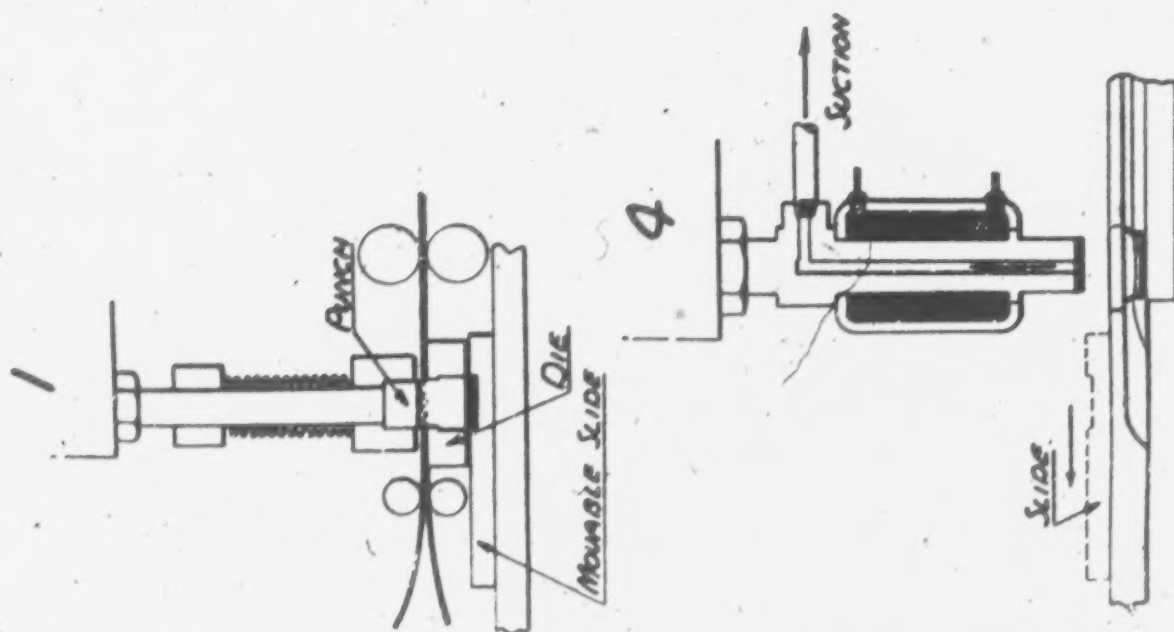
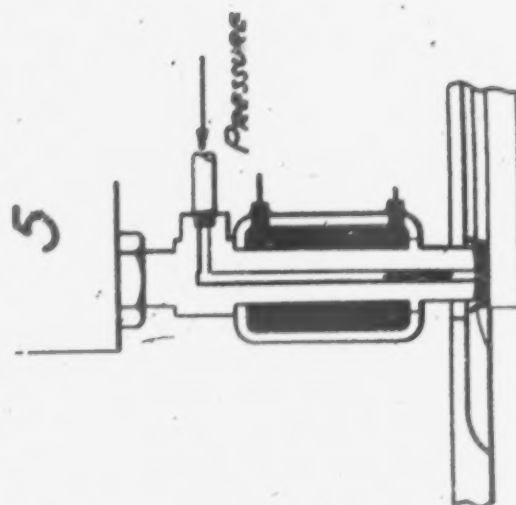
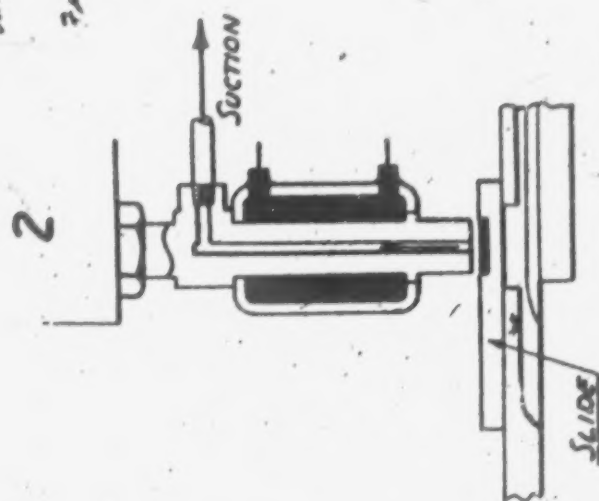
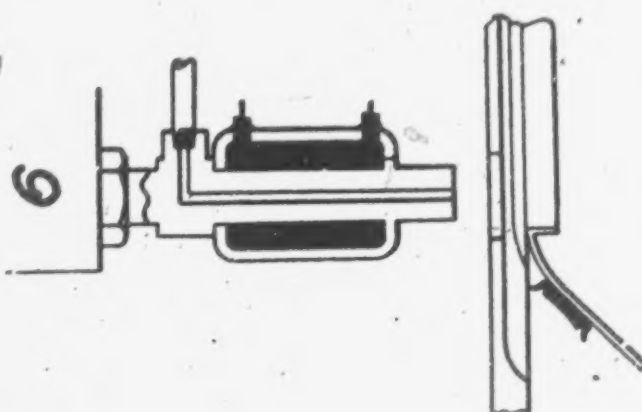
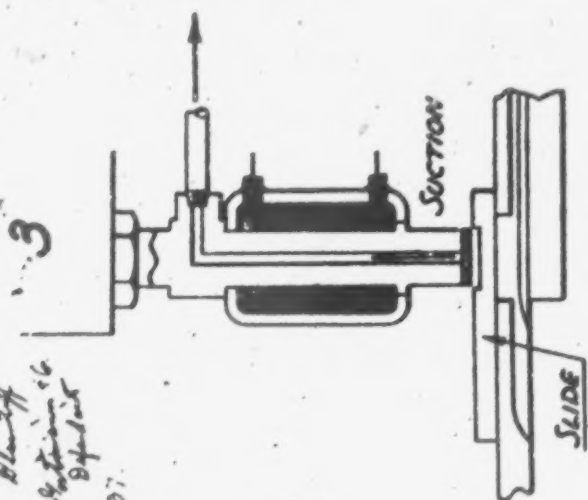
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PLAINTIFF'S EXHIBIT No. 43

EXH. 43

is 2 Dicks. 3 hours
 into Dicks 3 of New York
 Brown Co. & back to Dicks
 Pleasant
 7 miles and 15 minutes to
 Dicks
 E. No. 777.



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[fols. 790-791] PLAINTIFF'S EXHIBIT NO. 44

The Crown Cork and Seal Co.,
Baltimore, U. S. A.

November 9th, 1921.

To: _____.

From: Engineering Department, W. F. Walker, Jr.

Subject: Tin Foil Spot Machine.

The following is a short treatise on the operation of the Tin Foil Spot Attachment for #1 Crowns now in use in the Axa Department at Highlandtown.

The Tin Foil Spot is held fast to the cork of the crown by the Gutta Percha Tissue and this is accomplished in the following way as is shown on Figure #1 and #2.

The roll of Tin Foil "G" and the roll of Gutta Percha Tissue "P," are fed together thru the Feed Rolls "A," driven by Ratchet "R" which is actuated by Levers "L," which in turn receives its motion from Cam "C." The Tin Foil and Gutta Percha Tissue are fed together as previously described to the Cutting Punch "C," which cuts out the Tin Foil Spot and places it on the Feed Slide "F," which in turn, moves over into position under Heater "H." The Feed Slide is actuated by Lever "D." Now when the Feed Slide comes into position under Heater "H" with the Tin Foil Spot and Gutta Percha Tissue in place, the suction Pump "B" on its suction stroke raises the Tin Foil and [fol. 792] Gutta Percha Tissue off the Feed Slide "E," allowing same to return into its former position under the Cutting Punch to receive another spot. While the Tin Foil Spot and Tissue are being retained by the Heater "H," the Gutta Percha Tissue is being heated, the Heater "H" receives its heat power from the Induction Coil "S."

A Crown has now come into position under the Plunger and Heater "H" which has moved into position relative to applying the spot to the crown. This is accomplished by the action of the Pump "B," which on its return stroke blows the spot from its position in the Heater on to the Crown which is then pressed on to the cork in the crown by the Heater Plunger. This completes the cycle of operations necessary for applying the Tin Foil Spot to the assembled #1 Crown.


(Signed) Wm. F. Walker, Jr., W. F. Walker, Jr.,
Asst. Chief Draftsman.

(Here follow 4 photos, side folios 793-796)

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(PLAINTIFF'S EXHIBIT NO. 45



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APPRO. NO. 91036

DATE	POSTING REFERENCE	DESCRIPTION	MATERIAL	LABOR	OVERHEAD	NET DEBITS	CREDITS FOR POSTING ONLY
1926							
Dec.	911/1925	H. Payroll		26535	12880	39415	
	6/19231	Mit. Pay	7483			7483	
	11/19232	"	2031			2031	
1927	1/19250	"	1572	21135	12880	72	
Jan.	1/19251	H. Payroll		39522	14729	49021	
	1/19252	Mit. Pay				54251	
Feb.	1/19253	"	15269			15269	
	1/19254	"	24855	66057	27604	118521	

[fol. 797]

PLAINTIFF'S EXHIBIT No. 51

The Crown Cork and Seal Co.,
Baltimore, U. S. A.

April 15th, 1925.

To: The Executive Committee,

From: The Operating Committee.

Subject: Minutes of Meeting of Operating Committee held
April 14th, 1925.

The following are the Minutes of the Operating Committee held on April 14th, 1925, at which were present—

Messrs. J. R. Gorman, E. J. Costa, Henry Mann, F. E. Fusting.

Obsolete, Surplus and Idle Machinery and Equipment

We have very carefully reviewed all of the various items of machinery, tools, equipment, etc., comprising the item of \$1,045,432.55, as reflected on the Balance Sheet of February 28th. In setting forth our recommendations we have fully considered the nature of the item, its probable value for future use, together with the desirability of effecting immediate disposition and rendering the space occupied thereby available for other purposes. Our recommendations are contained in the tabulation which follows, and as shown under the caption "Disposition":

[fol. 798]

Description	Value of Cost Appraised	Disposition
Uncompleted Goebel Cork Feeders.....	\$58,466.22	Hold
Uncompleted Goebel Cutting Presses.....	56,428.00	Hold
Trade Machine Tools.....	284,248.42	Sell obsolete and inefficient tools and most of surplus made by out- side suppliers
Serax Slicing Mach. & Equipment.....	13,341.00)	Scrap if addition.
Serax Blacking Mach. & Equipment.....	12,772.80)	3" units are built.
Bleach. Machry. & Equip. Old Dept.....	4,320.00	Scrap
8 Embossing Machines.....	7,904.00	Sell
2 Dacro Paste Machines.....	2,074.80	Scrap
1 Cork Sheet Slicing Machine.....	2,489.66	Hold
3 tinfoiling machines.....	3,705.60	Scrap
1 J. A. Fay & Egan Resaw Machine.....	2,979.78	Hold
2 Taper machines.....	1,237.40	Sell
Block Moulding Equipment.....	20,181.00	Hold
53 Goebel Cork Feeders.....	111,300.00	Hold
15 Automatic Ovens, 1 Rotary Press, 1 Flat Bed Press and motor for driving ovens, oven fans and presses.....	97,718.91	Hold

Description	Value of Cost Appraised	Disposition
Old Serax Grinding Mchry. and equipment..	29,541.08	Hold as Reserve
Bleaching Machry. & Equipment—New Dept.....	11,104.15	" " "
2 Baling presses and pumps.....	2,217.16	" " "
2 Knowlton Paper Processing Machines....	3,456.92	" " "
1 Special Machine for stripping corkwood..	949.43	" " "
4 Attrition Mills.....	3,738.68	" " "
1 Wolf Double Disc Aspirator.....	331.67	Sell
Natural Cork Disc Machry. & Equipment..	139,980.10	Hold
Miscellaneous machines in Mach. Shop....	74,945.77	Sell portion
Miscellaneous equipment in Mach. Shop...	100,000.00	" "
	<u>\$1,045,432.55</u>	

The items marked "Hold" are not obsolete, but, on the contrary, are modern, up-to-date equipment, and we consider have a very distinct value and should be held. The items marked "Sell" we intend should be sold under the conditions which will yield the greatest return. The items marked "Scrap" are to be scrapped and sold to the highest bidder.

If our recommendations as herein contained are approved, steps will be taken immediately to effect disposition as rapidly as possible.

Respectfully submitted, — — —, Chairman, Operating Committee.


B.

(Here follow 6 photos, side folios 799-804)

616A

799

PLAINTIFF'S EXHIBIT NO. 52



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616B

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THE CROWN CORK AND SEAL COMPANY

REQUEST AND AUTHORIZATION FOR APPROPRIATION

DATE ISSUED 1-21-27

FOR ALL EXPENDITURES FOR EQUIPMENT, REPAIRS, ALTERATIONS OR EXPERIMENTS EXCEEDING \$25.00

APPRO. NO.

91097

FACTORY	DEPARTMENT	CHARGE	SIGNED	ESTIMATED COST
Highlandtown		McC.	<i>[Signature]</i>	
ORD. FACTORY ACCOUNTANT				TOTAL \$300.00

DESCRIPTION TO COVER MAKING A PRE-ASSEMBLING MACHINE FOR

Outtemporche ribbon and aluminum foil for Aluminum Spot Machines.

EXPLANATION TO ELIMINATE DIFFICULTIES WITH OUTTEMPORCHE RIBBON ON SPOT MACHINES/ THIS WILL INCREASE PRODUCTION OF ALUMINUM SPOT CROWNS CONSIDERABLY.

REQUESTED BY:

[Signature]
Gen. Bookel
GENERAL COUNCIL

WORKS MGR.

GENL. SALES MGR.

OFFICE MGR.

COMPTROLLER

[Signature]
Controller

COMMITMENTS
United States District Court

PURCHASE ORDER NO.	COMMITTED	COMMITTED OR PAID AMOUNT
	Eastern District of New York	
	Of Exhibit 5 in evidence	
	Date Nov-13/27	
	Mark Clerk	
	Deputy Clerk	

BUCKET DIVISION

UN 16 1932

6160

802

APPRO. NO. 4109

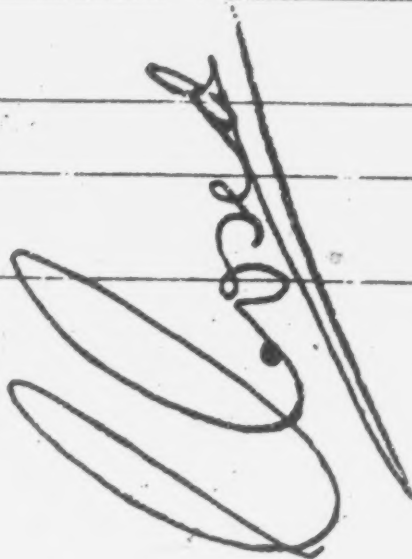
	POSTING REFERENCE	DESCRIPTION	MATERIAL	LABOR	OVERHEAD	NET DEBITS	CREDITS FOR POSTING ONLY
Jan.	M 85001	H. Pay Roll		8470	3224	11694	
Feb.	M 85003	M. Pay Roll	4328	1172	3198	4228	
	M 9016	H. Pay Roll		6825		10023	
Aug.	M 9022	M. Pay Roll	1149			1149	
	M 1749	M. & C	5277	15215	6022	27094	27094

6161

804

APPRO. NO. 41153

DATE	POSTING REFERENCE	DESCRIPTION	MATERIAL	LABOR	OVERHEAD	NET CREDITS	CREDITS FOR POSTING ONLY
Mar. 1927	M. 21001	H. Pay Roll		37.10	14.35	47.15	
Apr. 1927	M. 21002	Mat. Ret.	69.52			69.52	
Jan. 1928	M. 21003	M. & E.					116.67



[fol. 805] PLAINTIFF'S EXHIBIT No. 55

Adhesive for sticking Al. spots.

November 19, 1926.

Supt. Prod. Machy. G. Goebel.
Chemical Engineer, A. H. Warth.

Adhesive for Aluminum Foil

I spoke to you the other day about a product which is being made by E. I. duPont and which is suited for adhesive purposes. This particular material has the nitrocellulose and gum base and is already thinned to a consistency that makes it easy to apply to paper or other material. It dries quite readily, almost without the aid of heat and produces a firm, dry film. When this film is heated it becomes real tacky.

It was our intention to provide you with a sample, but find that we used all the material, and have sent to the duPont Company for another sample. When this arrives we will coat some Aluminum Foil and let you have the coated Foil.

(Signed) A. H. Warth, Chemical Engineer.

AHW—S.

[fol. 806] PLAINTIFF'S EXHIBIT No. 56

Non-Metallic Spot Crown for Sealing Liquids

My invention relates to that class of caps, closures, or crowns, that have a circular spot in the center of the cork disc or other liner, to prevent the contents of the package sealed, from coming in direct contact with the cork or other liner material.

Heretofore the spot in the center of the disc or liner of the crown has been made of metal, such as aluminum or tin, more particularly of tin because of its extreme flexibility and its superior sealing qualities. Bottle caps or crowns having a tin foil spot in the middle of the disc and not extending to the outer circumference of the discs are also known in the trade as tin foil center crowns. These crowns are used in enormous quantities in the sealing of both plain and carbonated waters, especially on those waters which have a sufficient degree of alkalinity or containing mineral matter, harmful to the cork disc. They are also used to a

lesser extent on beverages, chemical liquids, and other packaged goods, where there is danger of the substance staining or disintegrating cork and thereby more or less spoiling the contents of the package.

The object of my invention is to provide a closure having a disc with a non-metallic spot and which will have a broader field of application than the tin foil center crown now enjoys and to include the sealing of alkalinated and acidulated liquids and beverages that will ordinarily corrode tin foil and any other metals in commercial use for the purpose.

My further object is to provide a non-metallic spot crown [fol. 807] which is in every way as efficient as the metallic spot crown but more economical to manufacture than the metallic spot crown because of the lower cost of the material used in the spot.

Undoubtedly attempts have been made to use waxed paper, parchment paper, and the like as substitutes for the metallic spot, but such attempts have always resulted in failure for the reasons hereinafter set forth.

In order to completely cover the mouth of the bottle, the spot must be made slightly larger than the mouth, so that the spot actually overlaps the locking ring. In so doing and then placing the crown on the bottle, a paper of ordinary commercial quality and thickness splits or breaks when crown is forced on locking ring of bottle. Then again the ordinary commercial paper will not because of its thickness, stiffness and lack of elasticity seal high pressures, as 60 lbs. to 100 lbs. per sq. in. without leakage.

In my particular non-metallic spot crown I use an extremely tough and flexible paper, coated on one or both sides with varnish, or pitch or the like, more particularly an insulation paper prepared by varnishing express paper, which is wholly or largely made of a base of sulfite pulp, in contrast to coated Kraft (sulfate) paper and other papers, and which papers lack the tasteless, odorless, and flexible qualities of the coated express paper. Further I use this varnished express paper of a thickness of not less than .005" and not over .015", and a backing of elastic tissue such as gutta percha or the like, to secure the necessary sealing properties.

The attachment of the non-metallic spot to the cork [fol. 808] disc is effected by means of the elastic tissue,

which becomes sticky when warmed and adheres both to the disc and to the spot. The elastic tissue being insoluble in the liquid on which the non-metallic spot crown is placed tends to prevent the loosening of the spot in long contact with the contents of the bottle so sealed.

In the machine assembling operation a piece of the varnished paper is fed to the cutting punch with a piece of underlying gutta percha tissue. Both are then cut together to the required circular dimension, and the double spot cemented to the disc by means of a heated plunger being brought in contact with the varnished paper, and further keeping this contact by means of applied pressure to the spot until it is firmly cemented to the disc.

A wax coating may be placed over the non-metallic spot, overlapping its outer circumference; but this is not essential in securing a tight seal and holding high carbonation pressures without rupture of the spots or loosening of the spot from the disc. A wax coating, however, is preferable where the liner is a composition cork and not a natural cork disc.

What I claim as my invention is a new non-metallic spot for a Crown Cork, such spot being made of a material of proper nature, thickness and quality to seal liquids without tear or breakage of the spot under regular conditions of crowning.

A non-metallic spot of such material and assembly that will uniformly hold a carbonation pressure of at least 60 lbs. per sq. in. of the liquids on which the crown is placed.

A non-metallic spot which is affixed to the disc by means [fol. 809] of an elastic, adhesive, and water insoluble tissue such as gutta percha and in the manner described.

A non-metallic spot having all of the protective properties of the tin foil spot, and of a wider field of application than the latter in the sealing of liquids of all kinds.

Albin H. Warth.

Witnessed: George Goebel.

July 13, 1925.

PLAINTIFF'S EXHIBIT No. 57

Copy sent to Mr. Larduskey.

July 24, 1933.

John Waldron Corp., New Brunswick, N. J.

Attention Mr. L. B. Case

GENTLEMEN:

Relating to the proposal dated June 29th covering a complete line of foil coating, drying and slitting equipment, the general line-up looks satisfactory to us.

However, several modifications will have to be made of which Mr. Case is familiar but in order not to delay the building of the equipment, you may proceed to construct [fol. 810] same and furnish this company with a revised print explaining the general arrangement more fully.

The total price of this equipment is to be \$10,270.00 plus a 25" to 30" chill roll which is to be installed after the coated material is discharged from the drying unit. Mr. Case will advise this company as to the extra cost on this chill roll.

The completion of this equipment is expected to be within 6 to 8 weeks. We expect the Waldron Company to furnish us a floor plan so we may have the necessary elevated platform completed when the equipment arrives.

Should there be any other question, kindly get in touch with us immediately to avoid any unnecessary delay.

Yours very truly, The Crown Cork and Seal Company. George Goebel.

GG:IC.

(Letterhead of John Waldron Corporation)

New Brunswick

June 29, 1933.

Crown Cork & Seal Co., Baltimore, Md.

Attention Dr. A. H. Warth and Mr. Geo. Goebel

DEAR DR. WARTH AND MR. GOEBEL:

Enclosed herewith please find copy of our outline drawing [fol. 811] #182-33 by the J. O. Ross Engineering Corp., indicating the suggested assembly for the proposed special coating installation at your Baltimore Works, and designed

for assembly in the space measuring 60 ft. in length by 14 ft. in height adjoining your laboratory.

We have broken down the various figures entering into the total cost of this proposed equipment so you may consider same individually, and these costs are as follows, proportioned for 25" wide foils.

Reverse roll coating machine	\$1900.00
Mechanical apparatus inside of the dryer, including the conveyor equipment, together with front and tail ends	\$1650.00
An automatic guider of the Waldron-Dickhaut type for the guiding of the foil to the slit and re-winder, will cost, not including the 1/4 H. P. motor	\$210.00
Slitter and re-winder, equipped with 26 slitters for the cutting of ribbons 1" wide and including a trim	\$1850.00
Drying system designed for the handling of air up to 200° F., and indirect furnaces, as per drawing	\$4960.00
Ditto 450° F.	\$5910.00
Drying system designed for the handling of air up to 200° F., and direct furnaces, modification of drawing (Nichols type No. 2)	\$4460.00
Ditto 450° F.	\$4660.00

Above costs are f. o. b. shipping points, subject to our regular terms of 1 1/2% 10 days, net 30 days from date of shipment.

[fol. 812] Reverse Roll Coating Machine: Enclosed photo #4806 illustrates in a general way the type of construction which we propose to use in fabricating the reverse roll coating machine for the special lacquers as laid here at New Brunswick during the test runs, with the exception of a doctor roll is used in place of the doctor blade, as per the illustration. The raw stock roll stand is assembled close to the backing roll or cylinder to eliminate a long draw for the goods previous to coating, and we include variable speed control for the very accurately finished and ground chilled iron casting roll, together with micrometer adjustments for the casting roll and doctor roll. A dope pan is included, together with a modified suction attachment to maintain tension on the light weight foils while casting the coating in

place and without the necessity of applying an excessive amount of tension at the rewinding end of the dryer. The main drive for this reverse roll coating machine to be constructed for belt transmission, allowing for a quarter turn belt from an overhead lay shaft.

Conveyor and Threading Apparatus: Under this heading we include all the necessary roller chain, with special fixtures for the mounting of supporting cross members, the necessary head and tail roll sprockets, together with bearings, cross shafts, take-ups, and geared reductions for the application of power by means of an overhead lay shaft and belt, also a group of pulling out rolls synchronized with the conveyor equipment and interconnected by means of gearing and a clutch assembly so the conveyor may be stopped [fol. 813] at the will of the operator without stopping the flow of foil through the machine. Also these pulling out rolls will be assembled in such a manner that the goods may be led direct to a slitter and rewinder in place of the jumbo roll, as indicated on the drawing enclosed. No jumbo roll apparatus is included.

Together with the roller chain we include the necessary supporting and guiding mediums for assembly inside the dryer housing, and approximately 90—2¼" diameter roller bearing idler rolls assembled fast to the conveyor chain in such a manner that the conveyor chain may be used as a threading medium and then stopped while the goods may flow freely over the idler rolls from the coating machine to the slitting and rewinding apparatus. Such an assembly allows for the ready inspection of the various idler rolls assembled with the equipment and the same assembly also acts as a threading medium. No lay shaft with bearings is included with the equipment.

Slitter and Rewinder: Under this heading we include one slitter and rewinder of the same general construction as the machine inspected on our erecting floor, but equipped with slitter blades suitable for the slitting of foils in widths of 1", and we include leading out rolls assembled between the slitting knives and the rewinding shafts to prevent any tendency of the goods to buckle and allow loosely wound finished rolls of foil.

Drying Equipment: This system should be capable of drying 7,000 sq. in. of coated material in ten hours. For [fol. 814] drying this material under maintained condition of about 200° F., we would furnish the following:

Supply Unit: There will be two independent supply units each consisting of one section of type D-E Indirect Nichols gas fired unit, together with Clarage supply fan of the multivane design, which would deliver necessary volume of drying air when operated in connection with 3 H. P. motor.

Air Distribution: Supply air would be made up of volume of recirculated air together with the make up fresh air and would finally reach the sheet through perforations in the distributor duct located directly above the traveling material. The recirculated air as well as the exhaust will be drawn from below the material through the system of duct work terminating part at the exhaust, the balance in the supply unit. The recirculating and exhaust air volume would be kept under proper control by means of a system of dampers proportioning this air as conditions may require.

Exhaust Hood for Coater: We would provide the galvanized steel hood to be suspended directly above the coating rolls in order to take away the evaporated solvents as fast as they are produced. To this hood you could attach fan of suitable size to make this withdrawal positive.

All of the foregoing ducts and connections will be made up of substantial gauge galvanized steel or black iron in order to provide rigid construction.

[fol. 815] **Dryer Housing:** The housing will be built up of panel type construction formed by two outside sheets in between which is a 3" blanket of mineral wool. For supporting this housing we would provide all necessary structural steel as well as stiffening and bracing members which may be required. A number of inspection doors on the front side of this housing would be provided in order to permit observation of the process or for access purposes.

Automatic Temperature Control: In order that the operating temperature of this unit may be accurately controlled we have included in this estimate, one Foxboro single pen recorder controller for each of the two drying zones. This control device would be complete with bulb, flexible tubing, recording charts, filter set, safety and pressure reducing valves, but no control valve for regulating volume of gas being discharged into the heater. Supplementing these recorders we would furnish indicating thermometer at each of the two zones to enable the operator to observe maintained temperature within.

We have not included in this estimate any compressor as we believe suitable and constant supply of compressed air is available at the plant.

Texrope Drives: For driving each of the two supply fans as well as exhaust fan mentioned later, we would provide Texrope drives consisting of fan and motor sheaves and necessary number of flexible "V" belts.

Exhaust Unit: For removing the spent vapors from the system, we would furnish single exhaust fan located approximately at the center of the oven. This fan would be complete with the necessary discharge duct work. We would recommend, but we do not furnish, 1 H. P. motor for this fan.

To be Furnished by Customer: As requested by you, we have omitted from this proposal exhaust fan for the coater hood, gas burners, and valves, motors, control switches and other electrical devices and other incidental accessories necessary to complete Drying System which we have outlined. Purchaser will also furnish and install all insulation for exposed duct work and heater casings, and provide necessary labor for erecting the housing apparatus, structural steel, and duct work. Will also make any necessary building alterations to accommodate the apparatus.

Erection: We can furnish an erection superintendent to supervise and help in the erection of the housing and duct work for \$1.50 per hour per regular 8 hour working day, time and one half for all overtime, plus expenses to, from, and on the job.

Shipping Points

Waldron equipment, New Brunswick, N. J.

Fans, Kalamazoo, Mich.

Heaters, New Brunswick, or Detroit

Duct, work, casings and housing, New Brunswick, N. J.

Automatic controls, Foxboro, Mass.

Texropes, West Allis, Wis.

[fol. 817] In setting up our estimates we have not included the lay shaft synchronizing the coating head with the slit and rewinder, as this is an item that we believe you may better handle after the equipment has been assembled fast to your building, as any aligning and drilling of bolt holes while fabricating the housing may not correspond with sufficient accuracy due to slight variations in the building itself, and this means the work would have to be rechecked in the field.

We do not believe you will require over a 3 H. P., 40° motor to handle the mechanical equipment, although you may wish to install a 5 H. P. motor to avoid any possible overloads at any time.

Enclosed please find a copy of our log sheet showing the exact conditions produced during the experimental tests here at our New Brunswick Works this week, and it has been a pleasure to have both Dr. Warth and Mr. Goebel at our New Brunswick Works during these test runs.

Thanking you most kindly for this opportunity of quoting and hoping we may be favored with your order, which we assure you will receive our prompt attention, we are,

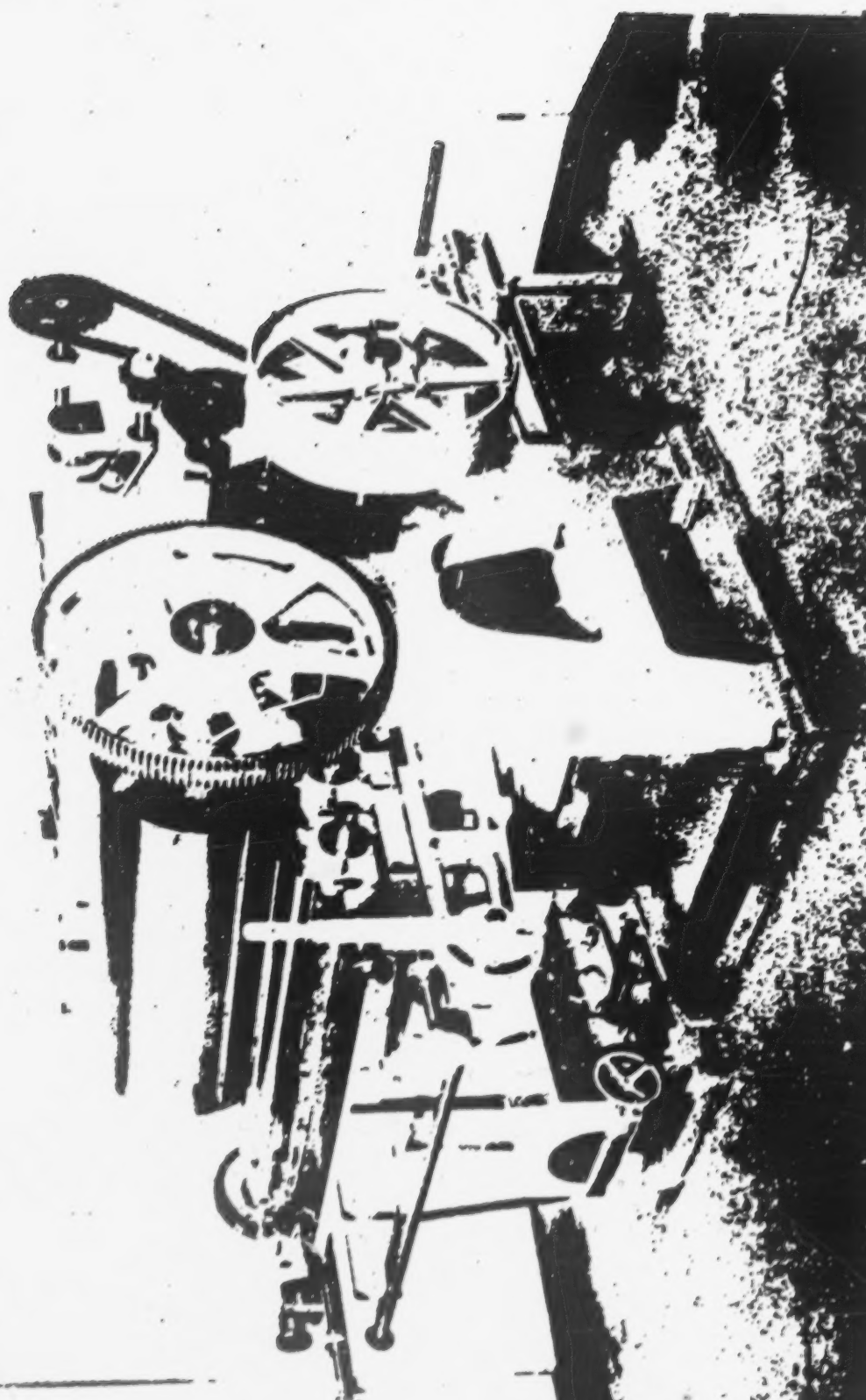
Very truly yours, John Waldron Corporation, L. B.
Case, C. E.

LBC M.

(Here follows 1 photo, side folio 818)

626A

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4806

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PAGE

[fol. 819] PLAINTIFF'S EXHIBIT No. 58

Mr. Gassman. Mr. Fusting.

July 11, 1933.

Mr. George Goebel, Chemical Director, A. H. Warth

Thermoplastic Coated Foil Spots.

The second lot of Thermoplastic Coated Aluminum Foil of .0022" thickness prepared at the Waldron Company and slit here, was put through the regular assembling operation on the third floor.

The only difficulty which we had with this lot was in the interruptions on the machine due to the fact that the slitting was bad, much of the foil being *no* narrow that the skeleton repeatedly broke. The spots, however, were well centured throughout.

Only 10 gross were run through the machine and those were placed in the hopper of an Improved Jumbo and run under practical operating conditions. None of the spots came off, and there was only one spot with a turned up edge. The regular gutta percha spot crowns were run through the machine, using the same quantity and under the same conditions. None of the spots fell off the discs, but there were eight turned up edges and innumerable edges which showed a very slight turning up.

As you will recall, with the first test the defects of the Thermoplastic Coated Spot were very much higher than with the Gutta Percha Spots. This we attribute as being due to the fact that there were many changes made in the thickness of the coating, the temperature of drying, etc.

It was contemplated that the second run would be better than the first, and the third run of coated foil which has not [fol. 820] yet been delivered here should be superior to the second. The proper slitting of the foil will undoubtedly preclude machine interruptions. The tests on the bottled beverages have thus far shown a great superiority of the Thermoplastic Coated Spot over the Gutta Percha Coated Spot in its adhesion to the cork over an extended period of time.

(Signed) A. H. Warth, Chemical Director.

AHW/ms.

PLAINTIFF'S EXHIBIT No. 59

Proposal and Contract from John Waldron Corporation,
New Brunswick, New Jersey, U. S. A.

Aug. 11, 1933.

Crown Cork & Seal Co., Baltimore, Md.:

We propose to furnish you the apparatus, described in the attached specifications, to be delivered F. O. B. New Brunswick, N. J., U. S. A.

One Equipment for the Coating Drying and Slitting of Foil,
Proportioned for a Maximum of 25 $\frac{3}{4}$ " Wide Materials

• Reverse Roll Coating Machine:

This machine is a special design incorporating the reverse roll principles recently perfected for the accurate control [fol. 821] and uniform coating of goods in web form and demonstrated to the Crown Cork & Seal Co. on foil products.

The raw stock roll stand is assembled close to the backing roll or cylinder to eliminate a long draw for the goods previous to coating, and we include variable speed control for the very accurately finished and ground chilled iron casting roll, together with micrometer adjustments for the doctor roll. A dope pan is included, together with a modified suction attachment to maintain tension on the light weight foils while casting the coating in place and without the necessity of applying an excessive amount of tension at the rewinding end of the dryer. The main drive for this reverse roll coating machine to be constructed for interconnecting to the conveyor drive, allowing for a quarter turn belt from an overhead lay shaft.

Conveyor and Threading Apparatus:

Under this heading we include all the necessary roller chain, with special fixtures for the mounting of supporting cross members, the necessary head and tail roll sprockets, together with bearings, cross shafts, take-ups, and geared reductions for the application of power by means of an overhead lay shaft and belt, also a group of leading out rolls in line with the conveyor equipment, and a clutch is assembled so the conveyor may be stopped at the will of the operator without stopping the flow of foil through the machine.

Together with the roller chain, we include the necessary supporting and guiding mediums for assembly inside the [fol. 822] dryer housing, and approximately 90-2-1/4" diameter roller bearing idler rolls assembled with the conveyor chain in such a manner that the conveyor chain may be used as a threading medium and then stopped while the goods may flow freely over the idler rolls from the coating machine to the slitting and rewinding apparatus. Such an assembly allows for the ready inspection of the various idler rolls assembled with the equipment and the same assembly also acts as a threading medium. No lay shaft with bearings is included with the equipment; neither do we include motor and variable speed control.

Automatic Guider:

We propose assembling fast to the frames of the dryer apparatus at the rewinding end of the machine a Waldron-Dickhaut automatic guider for the side guiding of the goods, correcting for any misalignment before slitting. We include with the automatic guider a small vacuum pump, together with base plate and V belt, ready for assembly with a 1/4 H. P. motor, no motor is included.

Slitter and Rewinder:

Under this heading we include one slitter and rewinder of the same general construction as the machine inspected on our erecting floor, but equipped with slitter blades suitable for the slitting of foils in widths of 1", and we include leading out rolls assembled between the slitting knives and the rewinding shafts to prevent any tendency of the goods to buckle and allow loosely wound finished rolls of foil.

[fol. 823] Drying Equipment:

This system is designed to dry 7,000 sq. in. of coated material in ten hours. For drying this material under maintained condition of about 450° we will furnish the following:

Supply Unit:

There will be two independent supply units each consisting of one section of type N2 direct Nichols gas fired unit, together with Clarage supply fan of the multivane design, which would deliver necessary volume of drying air when operated in connection with 3 H. P. motor.

Air Distribution:

Supply air would be made up of volume of recirculated air together with the make-up fresh air and would finally reach the sheet through perforations in the distributor duct located directly above the traveling material. The recirculated air as well as the exhaust will be drawn from below the material through the system of duct work terminating part at the exhaust, the balance in the supply unit. The recirculating and exhaust air volume would be kept under proper control by means of a system of dampers proportioning this air as conditions may require.

Exhaust Hood for Coater:

We would provide the galvanized steel hood to be suspended directly above the coating rolls in order to take away the evaporated solvents as fast as they are produced. To [fol. 824] this hood you could attach fan of suitable size to make this withdrawal positive.

All of the foregoing ducts and connections will be made up of substantial gauge galvanized steel or black iron in order to provide rigid construction.

Dryer Housing:

The housing will be built up of panel type construction formed by two outside sheets in between which is a 3" blanket of mineral wool. For supporting this housing we would provide all necessary structural steel as well as stiffening and bracing members which may be required. A number of inspection doors on the front side of this housing would be provided in order to permit observation of the process or for access purposes.

Automatic Temperature Control:

In order that the operating temperature of this unit may be accurately controlled we include in this proposal, one Foxboro single pen recorder controller for each of the two drying zones. This control device would be complete with bulb, flexible tubing, recording charts, filter set, safety and pressure reducing valves, but no control valve for regulating volume of gas being discharged into the heater. Supplementing these recorders we would furnish indicating thermometer at each of the two zones to enable the operator to observe maintained temperature within.

We have not included in this estimate any compressor, as we believe suitable and constant supply of compressed air is available at the plant.

[fol. 825] Texrope Drives:

For driving each of the two supply fans as well as exhaust fan mentioned later, we would provide Texrope drives consisting of fan and motor sheaves and necessary number of flexible "V" belts.

Exhaust Unit:

For removing the spent vapors from the system, we would furnish single exhaust fan located approximately at the center of the oven. This fan would be complete with the necessary discharge duct work. We would recommend, but we do not furnish, 2 H. P. motor for this fan.

Price:

Cost of this above specified equipment, including drying system designed for the handling of air up to 450° F, and direct furnances, as per drawing, is \$10,270.00.

Cooling Apparatus:

This unit consists of a reconditioned 36" diameter cylinder fitted with hollow shafts for the circulation of cold water inside, also a back geared drive with cross shaft, bearings for the drive shaft and the cylinder all assembled fast to structural members at the rewinding end of the machine.

Price:

The cost of this cooling apparatus amounts to \$382.00.

[fol. 826] Terms:

1½% Ten days, 30 days net from date of shipment.

To be Furnished by Customer:

As requested by you, we have omitted from this proposal, exhaust fan for the coater hood, gas burners and valves, motors, control switches and other electrical devices and other incidental accessories necessary to complete Drying System which we have outlined. Purchaser will also furnish

and install all cribbing, insulation for exposed duct work and heater casings, and provide necessary labor for erecting the housing apparatus, structural steel, and duct work. Will also make any necessary building alterations to accommodate the apparatus.

Erection:

We can furnish an erection superintendent to supervise and help in the erection of the housing and duct work for \$1.50 per hour per regular 8 hour working day, time and one-half for all overtime, plus expenses to, from, and on the job.

Shipping Points:

Waldron equipment, Kalamazoo, Mich.

Fans, New Brunswick, N. J.

Heaters, New Brunswick or Detroit.

Duct work, casings and housing, New Brunswick, N. J.

Automatic controls, Foxboro, Mass.

Texropes, West Allis, Wis.

[fol. 827] The price of this apparatus in accordance with attached specifications is — and you are to pay the same to us as follows:

If you should elect to pay the entire bill complete within ten days from date of invoice, you may deduct 1½% of the total contract. It is understood that in the event of failure to pay the entire contract price within ten days from date of invoice for any reason whatsoever, there will be no deduction and the total contract price shall be paid in accordance with the terms. In the event of partial shipments, it is understood that you shall be invoiced for the proportionate part of the price and that the terms of payment shall be the same for this proportionate part as stated above.

In case of delay, not of our making, the price shall be paid to us at such time as it would have been payable had such delay not occurred. In case of a delay of our making, the time of payment would be extended the exact number of days as the delay caused by us.

Our apparatus is guaranteed to be free from all latent defects in material and workmanship under normal use and service, and should any part of it be found within one year from date of shipment to be so defective at the time furnished, we will repair said part F. O. B. Factory or will

furnish F. O. B. Factory a similar part to replace it, provided the original part is returned to Factory with transportation charges prepaid, and then only when our examination shall disclose to our satisfaction such part to have been so defective. We do not make any guarantee against and we assume no responsibility for any defect in metal or other [fol. 828] material that can not be discovered by ordinary factory inspection. This guarantee shall not apply to any of our apparatus which shall have been repaired or altered outside of our factory in any way, so as in our judgment, to affect its stability, nor which has been subjected to misuse, negligence, or accident.

We make no guarantee whatever in respect to other apparatus supplied which is not of our making, or any trade attachment furnished, inasmuch as such apparatus is usually warranted separately by their respective manufacturers.

This guarantee is issued expressly in lieu of all other warranties expressed or implied by law or trade usage, and of all other obligations or liabilities on our part, and we neither assume nor authorize any other person to assume for us any other liability in connection with the sale of our apparatus.

The attached specifications are final; we shall not be bound to comply with any other specifications whether or not the same are referred to.

In the event that this contract includes the services of an erecting superintendent, it is understood that the extra charge made for his services will be \$1.50 per hour, based on a regular working day of eight hours, including traveling time, with double rate for overtime, Sundays and holidays. In addition to this, you are to pay his expenses from, to and on the job.

In this event you are to furnish all help required, also any required scaffolding and hoisting tackle. You will also provide all foundations, masonry work, grouting, supports, carpentry work, belts, motors, proper openings into build- [fol. 829] ing and any other material required except that which is specifically called for in our contract.

We shall not be held responsible for any loss, damage, detention, or delay caused by fires, strikes, accidents, insurrections, riots, embargoes, acts of carriers, or of civil or military authorities, or by any other cause whatsoever,

which is unavoidable or beyond our reasonable control; in no event, shall we be liable for damage resulting from the non-operation of your plant, loss of your product, or production, or for any special, indirect, consequential or additional damage whatsoever.

If we are required to pay any tax or charge hereafter imposed by governmental authority, or any other agency, upon merchandise herein described, or the production, sale, transportation, or delivery thereof, or upon any feature of this transaction, you will, upon demand assume such obligation or reimburse us for any outlay incurred.

Shipping promises are made in good faith but not guaranteed.

Title in this apparatus shall remain in us until the full purchase price including any modification or extension of payment whether evidenced by note or otherwise shall be fully paid in cash; and it is agreed that this apparatus shall retain its personal character, and shall not become a fixture by being annexed or affixed in any manner to any land, foundation, or building of any sort, and that if it be placed on any mortgaged or encumbered premises or land, foundation, or building of any sort, it shall not be subject to such mortgage or encumbrance. Upon default in the [fol. 830] payment of any part of the purchase price, we shall have the right at our election to take possession of this apparatus, and remove the same without legal process, and to retain all payments previously made as compensation for its use and wear. At our election, you will execute and deliver a conditional sale agreement complying with the laws of the place where this apparatus is to be located.

The acceptance of your order constitutes a complete and binding contract which can not be modified or cancelled without written consent of both parties.

No cancellation of this order will be entertained unless you agree to pay us within thirty days from date of your written request for cancellation, all cancellation charges, including all expenses incurred in connection with the sale and engineering, all expenses for shop labor and material incurred up to that time in producing the apparatus covered by this contract, plus 10% charges.

This proposal is in no way binding upon us until countersigned at our home office. When accepted and countersigned, this proposal and attached specifications will con-

tain and constitute the entire agreement with us, superseding all previous understandings regarding this apparatus, and is an indivisible contract of sale. All representations relative to this apparatus relied upon by you in accepting this proposal are specifically set forth herein.

The said parties for themselves, their successors, executors, administrators and assigns do hereby agree to the [fol. 831] full performance of the covenants herein contained.

JOHN WALDRON CORPORATION

By (Title)

Accepted this day of 19

By (Title)

Countersigned this day of 19

JOHN WALDRON CORPORATION

By (Title)

PLAINTIFF'S EXHIBIT No. 60

Follow-Up Copy

Order A-60236

To	Date 8/17/33
Waldron Corp.	Req. No. K-1597
New Brunswick,	Terms
N. J.	Due Our Plant Confirming
Mark Goods Highlandtown Plant—Dept. Appro. 1414 Goebel	
Ship Via	

1 Complete coating, drying, slitting and rewinding installation for Thermo-plastic coating aluminum foil and slit into 1" wide coils as quoted and proposed 8/11/33 including chill roll (at an extra of \$382.00)

\$10652.00

FOB Shipping Pt.

Confirming

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[fols. 832-844] PLAINTIFF'S EXHIBIT No. 64

636

A. K. KELLER.
BOTTLE SEAL ASSEMBLING MACHINE.
APPLICATION FILED APR. 18, 1912.

1,081,505.

Patented Dec. 16, 1913.

7 SHEETS—SHEET 1.

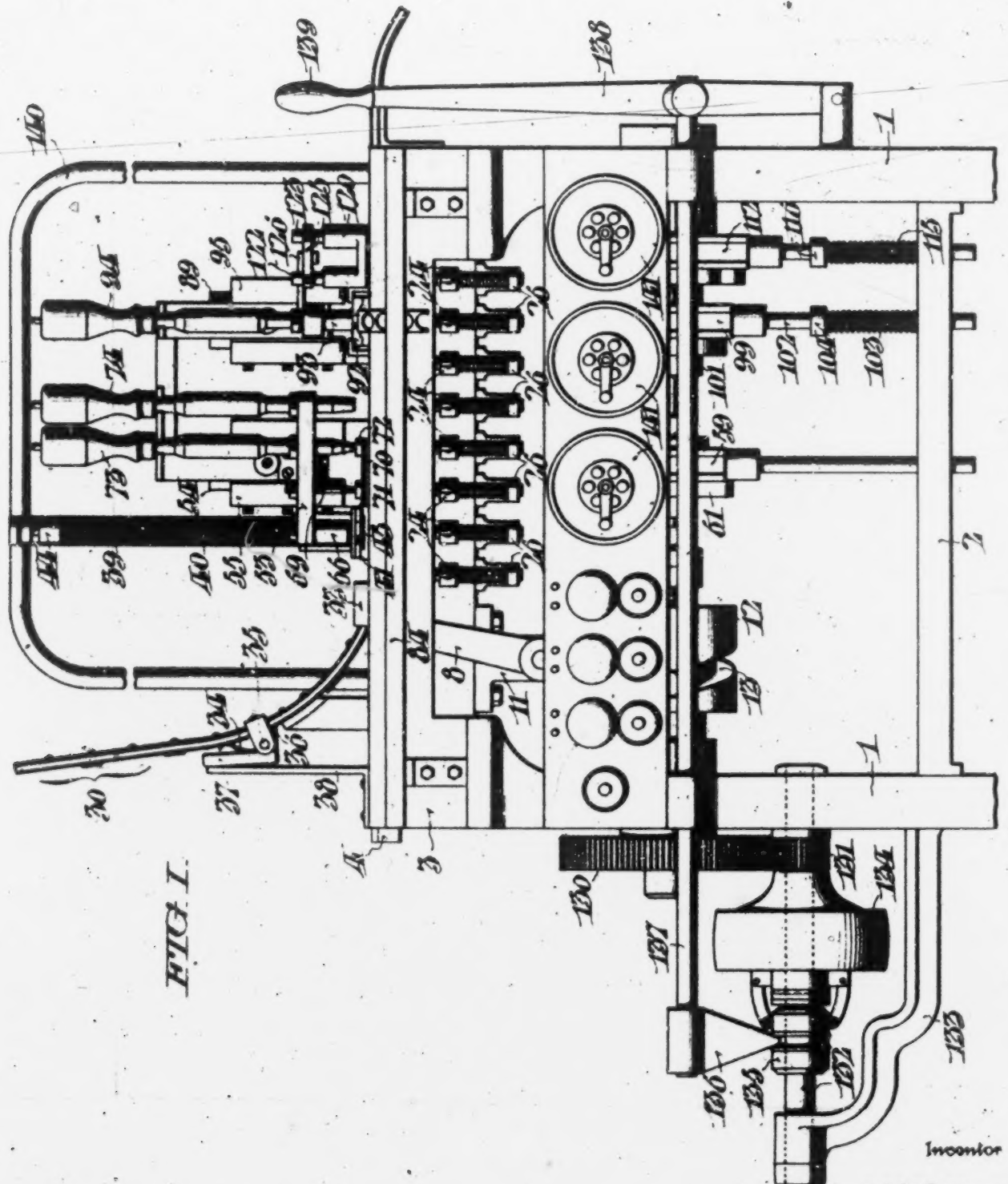


FIG. 1.

Witness
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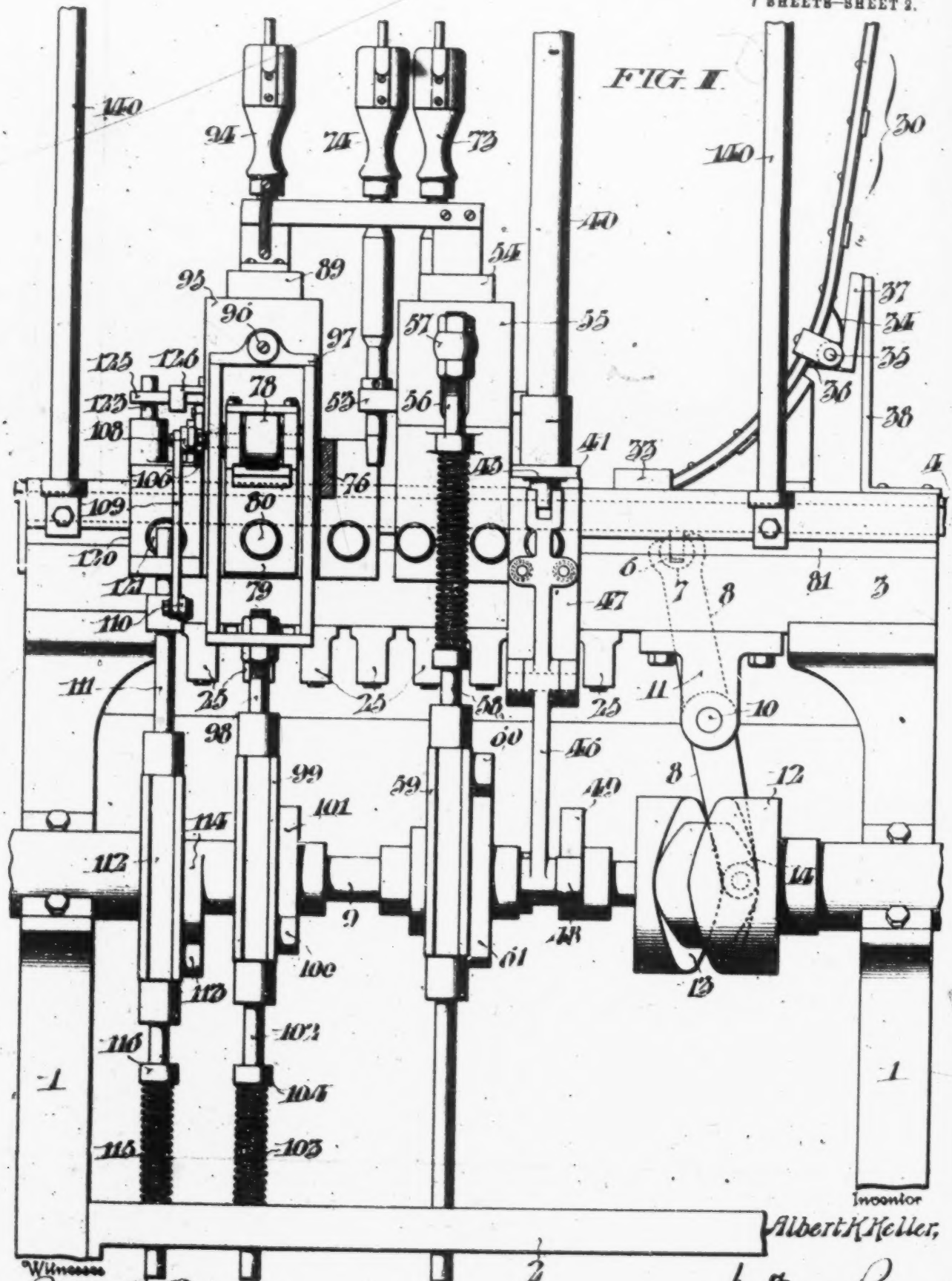
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Patented Dec. 16, 1913.

7 SHEETS-SHEET 2.



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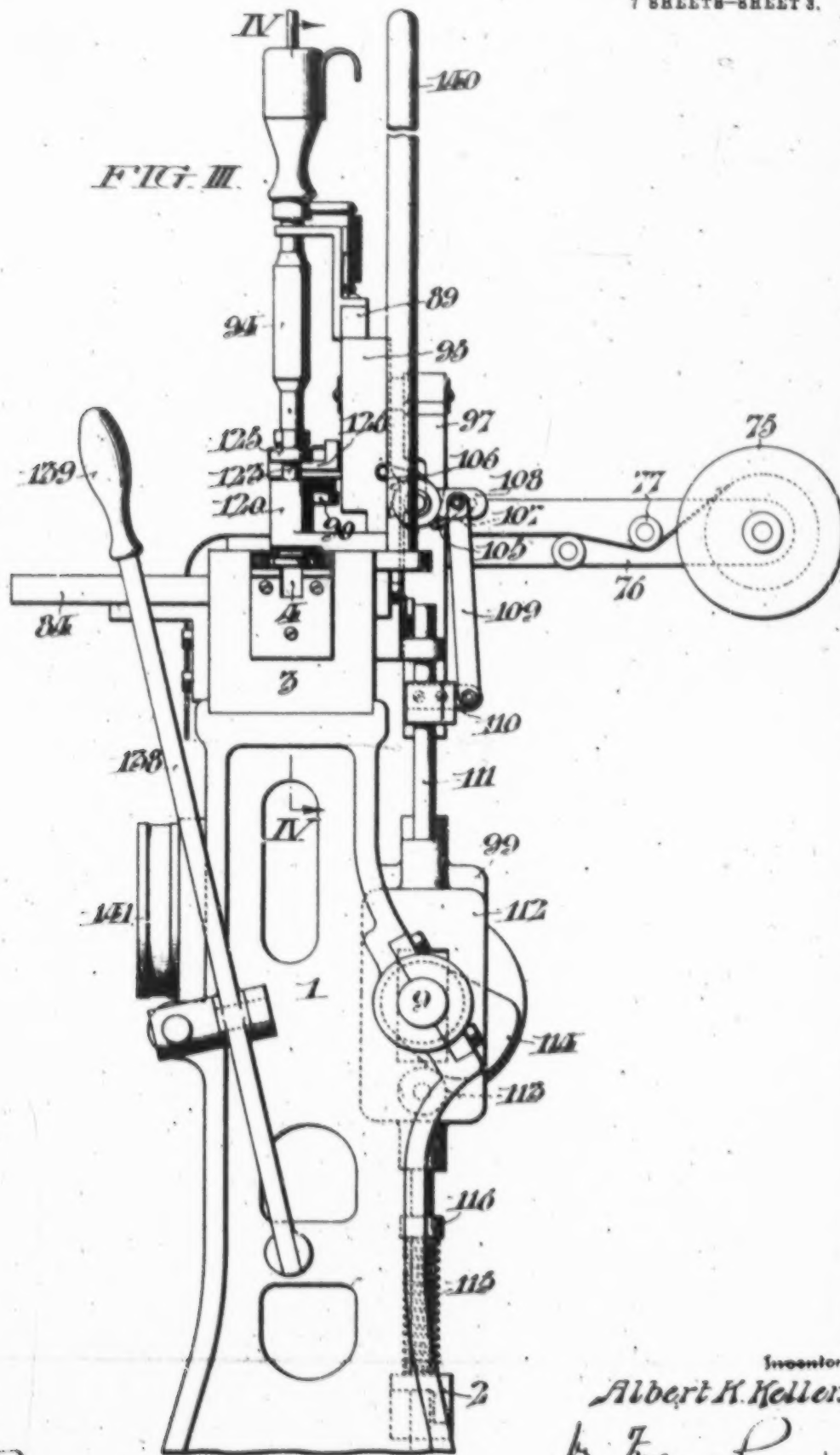
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1,081,505.

Patented Dec. 16, 1913.

7 SHEETS-SHEET 3.



Witnesses
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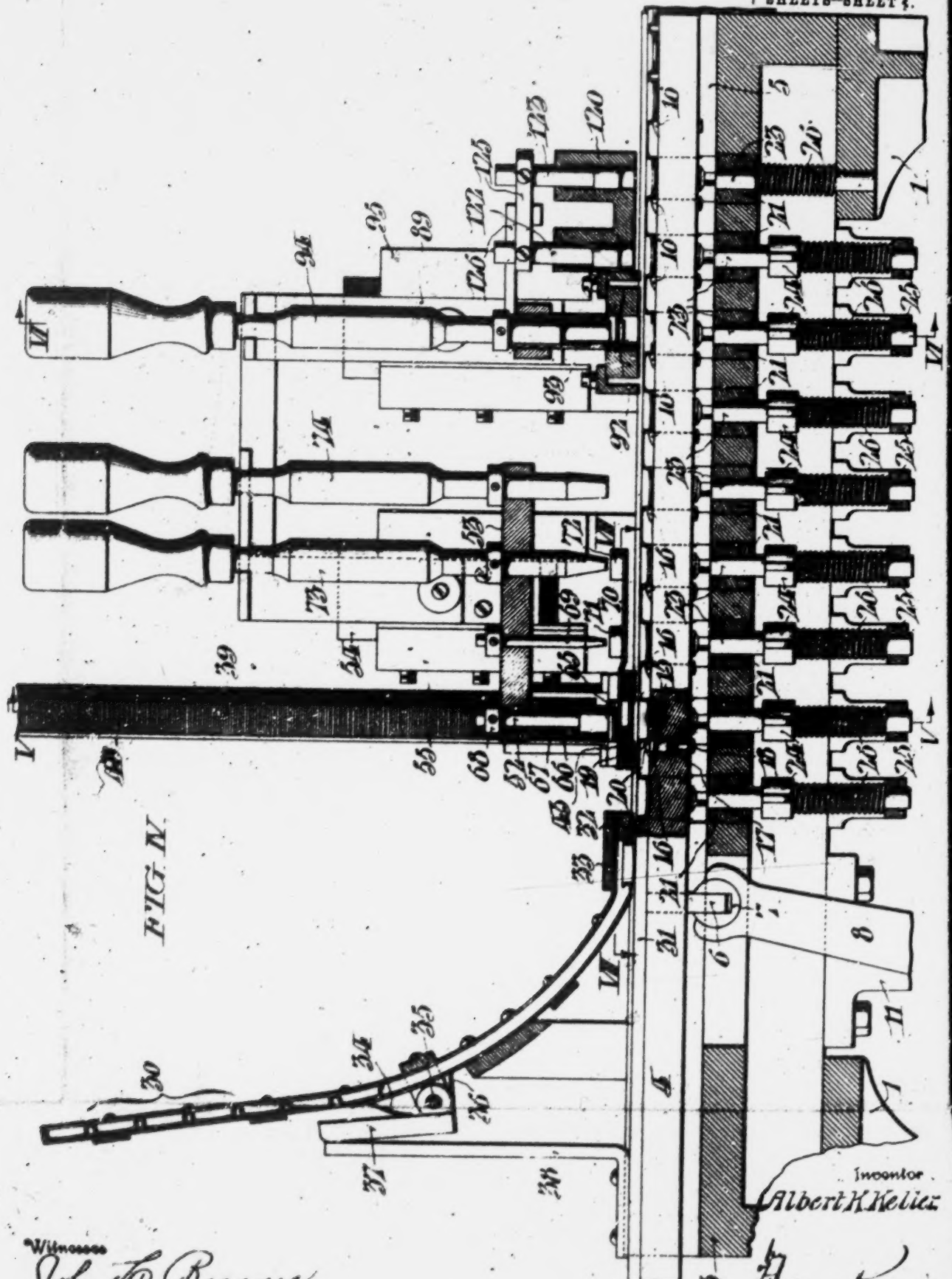
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1,081,505.

Patented Dec. 16, 1913.

7 SHEETS-SHEET 4.



Witness
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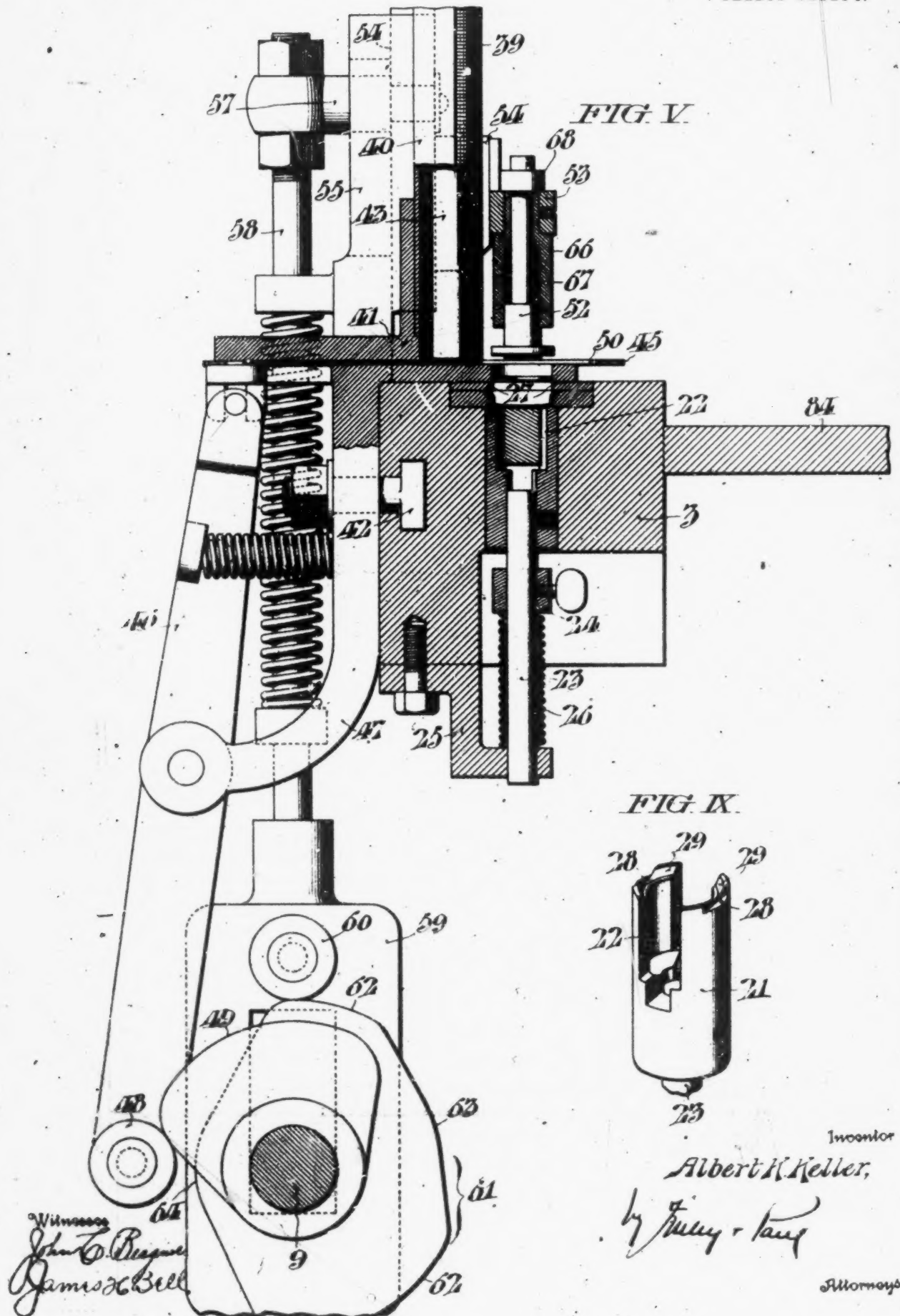
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A. K. KELLER.
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APPLICATION FILED APR. 18, 1912.

1,081,505.

Patented Dec. 16, 1913.

7 SHEETS-SHEET 5.



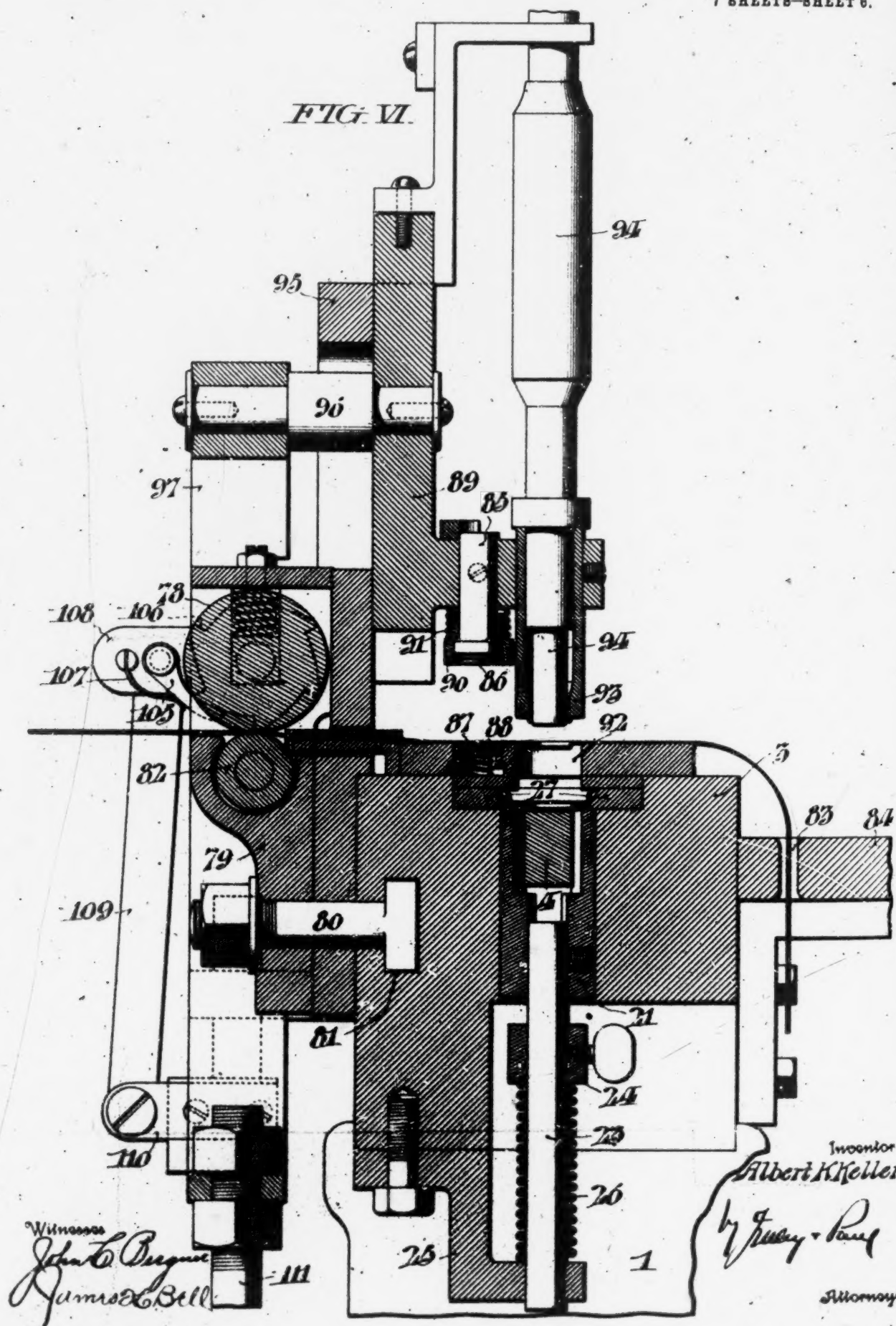
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1,081,505.

Patented Dec. 16, 1913.

7 SHEETS—8 SHEET 6.



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642

A. K. KELLER.
BOTTLE SEAL ASSEMBLING MACHINE.
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1,081,505.

Patented Dec. 16, 1913.

7 SHEETS—SHEET 7.

FIG. VII.

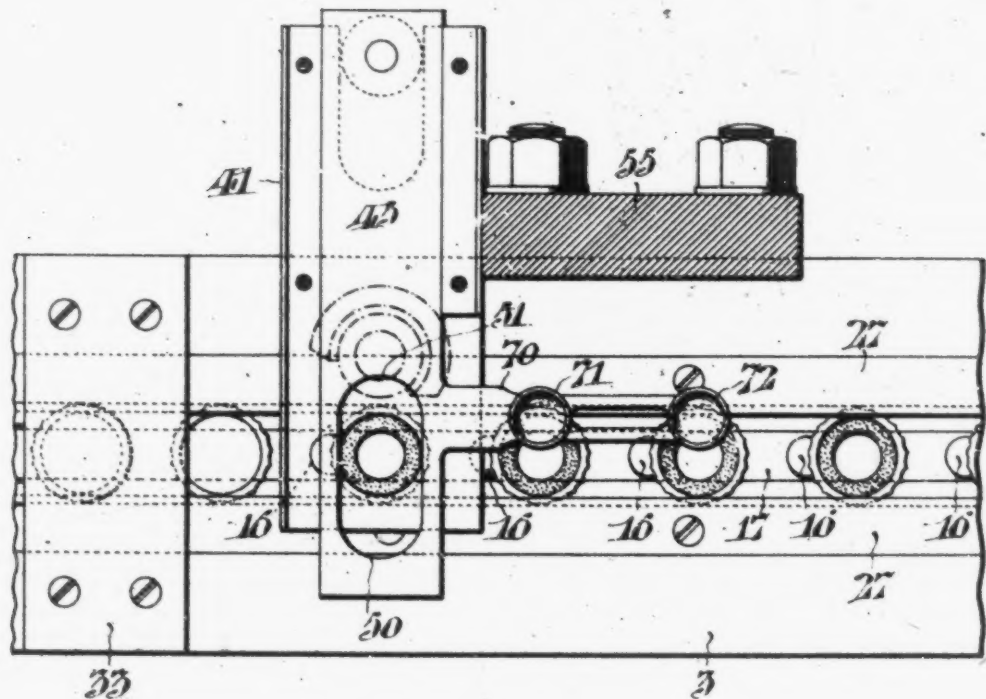
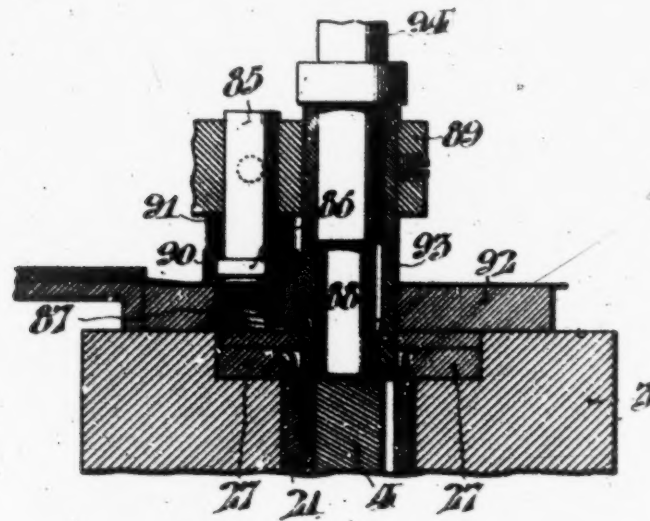


FIG. VIII.



Witness
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UNITED STATES PATENT OFFICE.

ALBERT K. KELLER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO AMERICAN CORK AND SEAL COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF MAINE.

BOTTLE-SEAL-ASSEMBLING MACHINE.

1,081,505.

Specification of Letters Patent.

Patented Dec. 16, 1913.

Application filed April 18, 1912. Serial No. 691,642.

To all whom it may concern:

Be it known that I, ALBERT K. KELLER, of the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Bottle-Seal-Assembling Machines, whereof the following is a specification, reference being had to the accompanying drawings.

Bottle seal assembling machines have been made which include devices for placing a sealing gasket in a cap, and for securing the gasket to the cap by placing a retaining member therein, which retaining member is cemented to the cap.

An object of the present invention is to provide a machine of the above character, wherein the retaining member may be soldered to the metal cap.

A further object of the invention is to provide an assembling machine which consists of a plurality of stations for placing the gasket in the cap and securing a retaining member to the cap for holding the gasket in place, which machine includes devices for feeding the cap intermittently from one station to another, together with devices for holding the cap at each station during the operation thereon.

A further object of the invention is to provide means for supplying acid to a reciprocating acid applying plunger, and also to apply solder to a reciprocating soldering iron, which soldering iron and acid applying device are so timed as to contact with a cap placed underneath the same, for supplying and spreading solder on the cap, which is subsequently used in securing the retaining member to the cap.

A further object of the invention is to provide combined means for cutting out a retaining member and for applying the same to the cap, which applying means includes a heated iron which operates to solder the retaining member to the cap.

These and other objects will in part be obvious, and will in part be hereinafter more fully disclosed.

In the drawings which show by way of illustration one embodiment of the invention, Figure I, is a front elevation of a machine embodying my invention. Fig. II, is a rear elevation of a portion of a machine with certain of the parts in section. Fig. III, is a view of the right hand end of the machine, as viewed in Fig. I. Fig. IV, is

a longitudinal sectional view along the line of the feed bar, a portion of the feed bar being shown in section, and is indicated at IV, IV in Fig. III. Fig. V, is a transverse section on the line V, V, of Fig. IV. Fig. VI, is a transverse section on the line VI, VI, of Fig. IV. Fig. VII, is a sectional view on the line VII, VII, of Fig. IV. Fig. VIII, is a detail in section, similar to parts of Fig. VI, showing the retaining member applied to the cap. Fig. IX, is a perspective view of the cap holding chuck.

The invention consists generally of a supporting frame on which is mounted a reciprocating feed bar, which feed bar operates to convey the caps through the machine from one station to another, where the cap is successively operated upon to place therein a sealing gasket, and a retaining member therefor. A chuck is located at each station for receiving and holding the cap during all operations thereon. At the first station the gasket is placed over the cap and is forced into the same. At the second station, acid is applied to the metal of the cap at the center thereof. At the next station a drop of solder is applied to the cap. At the fourth station, the solder is spread on the cap. As herein shown, the next station is an idle station. At the following station a retaining member is formed and applied to the cap, and the solder is heated so as to secure the retaining member to the cap. At the next two stations, as herein shown, plungers are applied to the retaining member for the purpose of pressing the same against the cap, and for the purpose of assisting in cooling the solder.

Referring more in detail to the drawings, the machine consists of a supporting frame, which is formed of side standards 1, 1, and a connecting bar 2. At the upper end of the standards is a supporting table 3, in which is reciprocated a feed bar 4 (see Fig. IV). The table 3, is provided with a centrally arranged slot 5, which extends longitudinally of the table throughout the length thereof. The feed bar 4, is rectangular in cross section, as shown in Figs. V and VI. The feed bar carries a downwardly projecting pin 6, which loosely engages a ball 7, in the upper end of a lever 8. Extending longitudinally of the frame is a driving shaft 9. The lever 8, is fulcrumed at 10, to a bracket 11, carried by the under face of the table 3. A

cylinder 12, having a cam groove 13, therein, is mounted on the driving shaft and the lever 8, is provided with a roll 14, which co-operates with the walls of the cam groove 13.

5 As the driving shaft rotates, the feed bar will be reciprocated back and forth through the oscillations of the operating lever 8. The feed bar is provided with a plurality of spaced sockets 15. In each socket is located
10 a yielding stop 16. This stop is normally spring-pressed upward by a spring 17. A screw 18, limits the upward movement of the stop. This stop is formed with a head having a square shoulder 19, on one face
15 thereof, and a rounded face or shoulder 20, which extends from the shoulder 19, to the outer face of the other side of the stop. The purpose of this stop is to feed the caps along the table. When the shouldered face of the
20 stop engages the cap, the cap will be moved therewith, while the tapered face of the stop will move underneath the cap and allow the bar to be retracted without moving the cap rearward therewith. As a means for holding
25 the caps at each station, I have provided a supporting chuck 21, which is shown in detail in Fig. IX. This chuck consists of a cylindrical portion through which is cut a groove 22. The groove 22, is adapted to
30 receive the feed bar and allow the feed bar to move freely through the same, as clearly shown in Figs. V, and VI. This chuck is mounted on the upper end of a stem 23. A collar 24, is carried by the stem. The lower
35 end of the stem passes through an opening in a bracket 25, carried by the table 3. A spring 26, encircles the stem 23, and bears at one end against the collar 24, and at the other end against the bracket 25. This
40 spring normally holds the chuck pressed upward.

The table is cut away at the top, and is provided with side plates 27. These side plates slightly overlap the opening formed
45 in the table for the chuck 21, and said side plates engage stop shoulders 28, formed on the chuck. It will be understood that there is a chuck for each operating station, also a chuck for receiving the caps from the feed
50 chute, and a chuck intermediate the solder applying station and the retainer applying station. In other words, the chucks are necessarily spaced a distance apart equal substantially to the length of reciprocation
55 of feed stroke of the feed bar so that the caps are carried by the stops on the feed bar from one chuck to another, through the machine, the stops yielding to allow the feed bar to be retracted and the caps held by the
60 chucks. Each chuck at its upper end is formed with tapered shoulders 29, which are adapted to receive the cap, and these shoulders form a pocket or seat in the chuck for the cap. The tapered shoulders will serve
65 to center the cap at the operating station.

The caps are fed to the feed bar from a chute 30. This chute may be supplied in any desired way with the caps and is so positioned relative to the feed bar that when a cap is discharged therefrom, it will rest on the upper face of the feed bar. The feed bar at a point adjacent the point of receiving the caps is provided with a raised part 31, forming a shoulder 32. A housing 33, is located on the table at the lower end of the
75 feed chute. A cap sliding down the feed chute will strike against the housing, and as the feed bar is retracted, said cap will fall on to the feed bar in front of the shoulder 32, so that when the feed bar moves
80 forward, the cap will be carried to the first chuck, where it will be held by the chuck when the feed bar is retracted. On the next reciprocation of the feed bar, the first stop will slide underneath the cap, the spring
85 for the stop yielding to allow the stop to slide underneath the same. As soon as the stop passes the cap, the spring will raise the stop so that the shoulder 19, of the stop will engage the cap on the next forward
90 movement of the feed bar, and carry the cap to the next chuck. The caps are held supported in the feed chute by a retaining finger 34. This retaining finger is mounted on a rock shaft 35, which carries a second
95 retaining finger 36. The shaft also carries an arm 37, which is positioned so as to contact with a bracket 38, which is rigidly fastened to the feed bar. When the feed bar moves forward, the bracket 38, striking
100 the arm 37, will turn the rock shaft so as to cause the retaining finger 34, to engage a cap and support the caps in the feed chute while the cap beneath the one engaged by the retaining finger 34, will be released so
105 that the same may pass down the chute to the housing 33, on the supporting table.

When the feed bar is retracted or moved in the opposite direction, the retaining finger 36, by gravity movement of the arm 37,
110 will be moved across the passage in the chute and will sustain the column of caps. At the first station, the sealing gasket is applied to the cap. The sealing gaskets 39, as herein shown, are formed of cork and are
115 disk-shaped, having a central opening there-through. These caps are placed in a stack holder 40. The stack holder 40, is carried by a bracket 41, which is secured to the table by a T-head bolt 42, which may be adjusted
120 in a T-slot in the rear of the table. The stack holder is open at the front side so that the gaskets are at all times accessible to the operator. A rod 43, extends centrally through the gaskets and is supported by the
125 upper end of the chute, as clearly shown in Fig. I. A weight 44, freely slides on the rod and normally holds the gaskets pressed against the table at the lower end of the chute. A feed slide 45, moves underneath
130

the stack holder and is adapted to engage one gasket at a time and carry the same into position to be applied to the cap. This stack holder is directly in rear of the second chuck, and the feed slide moves in a direction transversely of the table, so that the gasket as it is carried forward, will be moved over the cap held by the second chuck. The feed slide 45, is reciprocated back and forth by a lever 46, which is pivoted to an arm 47, carried by the bracket 41. The lever at its lower end carries a roller 48, which coöperates with a cam 49, on the main shaft 9. This cam is so shaped as to move the feed slide forward and to give a dwell thereto at the forward end of its stroke and then to move the slide to the rear end of its stroke, where it is also given a short dwell. The feed slide, as clearly shown in Fig. VII, extends entirely across the feed bar and is formed with an oblong slot 50, which is shaped to receive the sealing gaskets, and the inner edge 51, of the opening engages the gaskets and carries the same forward over the cap. The gasket is carried into the cap by a plunger 52. This plunger is mounted on a cross head 53, which is secured to a slide 54. The slide 54, is mounted for vertical movement in the supporting bracket 55. Said bracket is provided with a slot 56, and a lug 57, carried by the slide 54, extends through said slot.

A rod 58, is secured to the lug 57, and is adapted to reciprocate in suitable bearings carried by the bracket 55. The lower end of the rod is formed with a slotted head 59, which engages the main shaft 9, and the rod is thus guided in its vertical movements by said main shaft. A roller 60, carried by the slotted head 59, coöperates with a cam 61, on the main shaft 9. This cam 61, is constructed with two high portions 62, and two lower cam portions 63, and 64. It will be apparent from this construction, that the slide with the plunger 52, will be raised by the portion 62, to its extreme upper position, and will be lowered to its extreme lower position by the portion 64, and to an intermittent position by the portion 63. The purpose of this full and part stroke of the slide will be apparent when the acid-applying and solder-applying devices are described. This forward movement of the slide causes the plunger 52, which is formed with a head 65, to engage a gasket fed underneath the same by the feed slide 45, and carry the gasket down into the opening in the table directly above the second chuck. The plunger 52, is mounted in a barrel 66, and is spring-pressed downward by a spring 67. A collar 68, limits the downward movement of the plunger. This yielding movement of the plunger allows for any irregularities in the thickness of the cap, so that the gaskets will be seated in the cap with a yielding

pressure. The first or part stroke of the plunger carries the gaskets to the position shown in Fig. V, while the second or full stroke of the plunger carries the gasket into the cap.

After the gasket has been placed in the cap, the cap is conveyed by the feed bar to the next chuck, where the acid is applied to the cap. This is accomplished by the acid-applying rod 69, which is carried by the cross-head 53. This rod will, therefore, reciprocate with the cross-head and will be given a part stroke and a full stroke in the same manner as said cross-head imparts movements to the plunger 52. The feed slide 45, is formed with a laterally projecting arm 70, which carries an acid cup 71. This arm is also provided with a solder cup 72. A soldering iron 73, which as is herein shown, is of the usual electrically heated hand type, is also adapted to be mounted in the cross-head 53. The slide 54, is provided with a support for the upper end of the soldering iron. A second electrically heated spreading iron 74, is mounted in the cross-head 53. These two soldering irons 73, and 74, will move up and down with the cross-head in the same manner as the acid-applying rod 69. The movement of the feed slide is so timed that on the part stroke of the cross-head, caused by the portion 63, of the cam 61, the feed slide is at the forward end of its stroke, and the acid cup and solder cup are consequently underneath the acid-applying rod and the soldering iron. This part stroke of the cross-head will cause the acid-applying rod to dip into the acid, and will also cause the soldering iron to dip into the solder in the soldering cup. As the cross-head is raised, a drop of solder and also a drop of acid will be held on the end of the soldering iron, and acid-applying rod, respectively. On the next down stroke of the cross head, which is a full stroke, the acid-applying rod will be carried down into contact with the inner face of the cap, and acid will be thereby applied to the cap. On this same stroke, the soldering iron will be carried down into contact with the cap located in the next succeeding chuck, and a drop of solder will be applied to the acid treated surface of the cap. On this stroke the spreading iron will also engage the solder in the cap carried by the chuck underneath the same. It will be understood that while the plunger, the acid-applying rod, and the soldering iron operate simultaneously, that each of these elements are operating upon a separate cap held by the chuck underneath the same. After the solder has been applied to the cap, the cap is moved forward another step to a holding chuck, which, as herein shown, is an idle station. From this idle station, the cap is carried to a station where the retaining member is ap-

plied to the cap. This retaining member consists of a disk of thin metal which is crowned so as to feed or enter the center opening in the sealing gasket, and is also provided with a flange which overlaps the gasket so that when the retaining member is soldered to the cap, the gasket will be securely held by said retaining member.

The retaining member is constructed and applied to the cap in the following manner: A sheet of metal from which the retaining members may be made, is wound on a spool 75, (see Fig. III) which is mounted in a bracket arm 76, carried by the supporting table. The strip of metal passes underneath tension rolls 77, and is led across the table in a direction at right angles to the line of reciprocation of the feed bar. A feeding roller 78, is yieldingly mounted on a supporting bracket 79, which is secured to the table 3, by a T-head bolt 80, which is adjustable in a T-slot 81, extending longitudinally of the table. Cooperating with the roll 78, is a roll 82. The strip of metal passes between said rolls and is led through a suitable opening in the bracket across the table, and the waste metal in the strip passes over the front of the table down through an opening 83, in the bracket 84, at the forward side of the machine. The strip is first shaped so as to form a center projection adapted to fit within the central opening in the sealing gasket. This is accomplished by a plunger 85, (see Fig. VI). The plunger 85, is formed with a shaping head 86, and cooperating with the plunger is a yielding anvil 87. This anvil is mounted in the table, and is spring-pressed upwardly by a spring 88. The plunger or shaping die 85, is carried by a reciprocating cross-head 89. A sleeve 90, surrounds the stem of the die or plunger, and is held normally spring-pressed downward by a spring 91. The purpose of this collar is to strip the metal from the die, when the die is lifted from the metal strip. When the cross-head 89, is reciprocated, the shaping die engages the strip and the anvil yields to allow the center portion to be projected by the die in the manner clearly shown in Fig. VIII. Upon the retracting of the die, the sleeve 90, will push the strip from the die and the anvil will lift the strip so that it may be moved forward directly over the chuck carrying the cap. The retaining member is cut from the strip by a cutting die 92. This cutting die cooperates with a male die member 93. This die is carried by the cross-head 89, and as the cross-head moves downward, the die will engage the strip and sever the retaining member therefrom, and the further downward movement of the die will carry said retaining member into engagement with the cap supported by the chuck underneath the same. This die 92, as shown in Fig. VI, is formed

with a central opening therethrough. An electrically heated iron 94, is supported by the die member 93, and projects slightly beneath the end thereof.

When the die moves down so as to cut the retaining member from the strip, the heated iron will move with the die, and will engage the retaining member. When the retaining member is carried into the cap, the heated iron will be brought against the upper surface of the retaining member, and the heat of the iron will melt the solder on the cap, and cause the cap and retaining member to be firmly attached or soldered together. The cross-head 89, slides in suitable guides in a bracket 95. Said cross-head carries a stud 96, which stud is secured to the upper end of a yoke 97 (see Fig. II). The yoke 97, at its lower end, is attached to a rod 98, which is provided with a slotted head 99, which engages and is guided by the main shaft 9. Said slotted head carries a roller 100, which cooperates with a cam 101, on the main shaft. The lower end of the slotted head is connected to a rod 102, which reciprocates in the bar 2, carried by the frame. A spring 103, is located between the bar and a collar 104, on said rod 102. This spring normally presses the roller 100, into engagement with the cam 101, and holds the cross head raised. The cam operates to move the cross-head positively downward, so as to cause the shaping die and cutting die to operate upon the strip.

The feeding roll 78, for the strip of metal is intermittently rotated by a pawl 105, which engages ratchet teeth 106, carried by the feed roll 78. A spring 107, normally presses the pawl into engagement with the teeth of the ratchet. This pawl and the spring are mounted on an arm 108, which is pivoted concentrically of the roll and is oscillated by a link 109, which is pivoted to an arm 110, carried by the upper end of a rod 111. The rod 111, is mounted to reciprocate in a suitable bearing at the upper end, and in the cross bar 2, at its lower end. This rod carries a slotted head 112, in which is mounted a roller 113, which cooperates with a cam 114. A spring 115, bearing against the cross bar 2, and the collar 116, normally holds the rod 111, raised. The cams 114, and 101, are so timed that the feed roller is rotated to feed the strip beneath the shaping die and cutting die when the cross head 89, is raised.

Mounted in a bracket 120, secured to the table 3, by a bolt 121, are two cooling irons or plungers 122, and 123. These cooling irons are cylindrical in shape, and are adapted to enter the cap and press the retaining member and gasket against the cap. These irons not only press the parts into engagement while the solder is cooling, but through contact with the metal will aid in

conducting the heat away from the metal, and cooling the same. Said plungers are so spaced as to operate upon the caps retained by successive chucks. The plungers are united by a cross piece 125, and are adapted to drop into the caps under the influence of gravity. They are raised by means of a finger 126, which engages the under surface of the cross piece 125. The finger 126, is secured to the cross head 89, already mentioned. The caps after having the retainer secured thereto, are fed through the machine through the reciprocating movements of the feed bar.

The main shaft 9, carries a gear wheel 130, which meshes with a pinion 131, on a counter-shaft 132, mounted in the frame, and in a bracket arm 133. A combined friction clutch and driving pulley 134, is carried by the counter-shaft. Said clutch is controlled by a sliding collar 135, and an arm 136, which is carried by a rod 137. The rod 137, is secured to a lever 138, which is provided with a hand grip 139, positioned for easy access by the operator. A supporting bar or frame 140, is carried by the main table, and serves as a means on which the irons may be hung when removed from the machine, or from other places. The temperature of each iron is controlled by a separate electric rheostat 141. The operation of my device will be apparent from the above description. The caps are placed in the feed chutes and are fed one at a time to the feed bar which, as it reciprocates, conveys the caps from one chuck to another until the caps are presented to each one of the different operating stations. The sealing gaskets are fed one at a time above the caps at the gasket-applying station, and the gaskets are seated in the caps by a reciprocating plunger. At the next station acid is applied to the cap, after which solder is applied and spread on the cap, and then the cap is conveyed to the station where the retaining member is formed, shaped, and cut, and at this station the retaining member is placed in the cap and soldered thereto.

After the retaining member is attached to the cap, it is pressed against the cap and the parts cooled by the plungers operating thereupon.

It is obvious that minor changes in the details of construction and arrangement of parts may be made, without departing from the spirit of the invention as set forth in the appended claims.

Having thus described my invention, I claim:

1. In a machine of the class described, the combination of means for placing a sealing gasket in a cap; devices for applying solder to the cap; devices for forming and applying a retainer to the cap, and for soldering the same thereto.

2. In a machine of the class described, the combination of means for placing a sealing gasket in a cap; means for subsequently applying solder to the cap; means for forming and cutting a retainer and for placing the same in the cap; and means for heating the solder to secure the retainer to the cap. 70

3. In a machine of the class described, the combination with means for applying a gasket to a cap; devices for applying solder to the cap; devices for forming and applying a retainer to the cap and soldering the same thereto; and means for successively presenting a cap to the gasket-applying means, the solder-applying devices and the retainer forming and applying devices. 75 80

4. In a machine of the class described, the combination with means for applying a gasket to a cap; devices for applying solder to the cap; devices for forming and applying a retainer to the cap and soldering the same thereto; and means for successively presenting a cap to the gasket-applying means, the solder-applying devices, and the retainer forming and applying devices, said presenting means including a reciprocating bar and yielding stops carried thereby. 85 90

5. In a machine of the class described, the combination with means for applying a gasket to a cap; devices for applying solder to the cap; devices for forming and applying a retainer to the cap and soldering the same thereto; means for successively presenting a cap to the gasket-applying means, the solder-applying devices, and the retainer forming and applying devices, said presenting means including a reciprocating bar and yielding stops carried thereby, and yielding chucks for holding the caps from rearward movement with the feed bar. 95 100 105

6. In a machine of the class described, the combination of a gasket-applying station; a solder-applying station and a retainer forming and applying station; and means for feeding caps successively to said stations, said means including a reciprocating bar; stops carried thereby; and a yielding chuck located at each station for receiving and holding the cap. 110

7. In a machine of the class described, the combination of a gasket-applying station; a solder-applying station; and a retainer forming and applying station; and means for feeding caps successively to said stations, said means including a reciprocating bar for positively moving the caps from one station to another; yielding chucks at each station for holding the caps, said chucks including means for centering the caps at the stations. 115 120 125

8. In a machine of the class described, the combination of a gasket-applying station; a solder-applying station and a retainer forming and applying station, and means for feeding caps successively to said stations. 130

said means including a feed bar; means for reciprocating the feed bar; yielding stops carried by the feed bar for positively engaging and moving the caps from one station to another; and a yielding chuck at each station for engaging and holding the cap.

9. In a machine of the class described, the combination of a gasket-applying station; a solder-applying station and a retainer forming and applying station, and means for feeding caps successively to said stations, said means including a feed bar; means for reciprocating the feed bar, yielding stops carried by the feed bar for positively engaging and moving the caps from one station to another; and a yielding chuck at each station for engaging and holding the cap, said yielding chuck having means for engaging and centering the cap at the station.

10. In a machine of the class described, the combination of a gasket-applying station; a soldering station; a retainer forming and applying station; a reciprocating feed bar; a yielding chuck located at each station, each of said chucks having a slot formed therein, in which said bar reciprocates; springs for normally pressing said chucks upward, and stops for limiting the upward movement of the chucks.

11. In a machine of the class described, the combination of a gasket-applying station; a soldering station; a retainer forming and applying station; a reciprocating feed bar; a yielding chuck located at each station; each of said chucks having a slot formed therein, in which said bar reciprocates; springs for normally pressing said chucks upward, and stops for limiting the upward movement of the chucks, said feed bar having a plurality of yielding stops adapted to engage the caps and positively carry the same from one chuck to another.

12. In a machine of the class described, the combination of a feed bar for feeding caps step by step through the machine; means for applying a gasket to the cap, including a gasket stack holder; a reciprocating feed slide; a plunger for engaging the gaskets and placing the same in the caps; an acid applying rod, and a soldering iron; and means for simultaneously reciprocating said plunger, said rod, and said iron.

13. In a machine of the class described, the combination of means for feeding caps; means for applying a gasket thereto; and means for applying solder to the cap, including an acid-applying rod; a soldering iron; an acid cup; a solder cup; and means for causing said acid-applying rod and said soldering iron to dip into said cups prior to the engagement of the caps by the acid rod and soldering iron.

14. In a machine of the class described, the combination of means for feeding caps; means for applying a gasket thereto; and means for applying solder to the cap including a soldering iron; a solder cup; means for giving said iron a long and short reciprocation; and means for moving the solder cup underneath said iron at said short reciprocation.

15. In a machine of the class described, the combination of a frame; a table supported by said frame and having a longitudinal groove therein; a cap feeding bar reciprocating in said groove; means for reciprocating said bar; means carried by said bar for positively feeding caps step by step along said table; a yielding chuck for engaging and holding the caps; a gasket-applying means for inserting a gasket in a cap, an acid-applying rod for applying acid to a cap, a soldering iron for applying solder to the cap, a spreading iron for spreading the solder on the cap, a forming die, and a cutting die for forming and placing a retainer in the cap; and a soldering iron for heating the solder to secure the retainer to the cap.

16. In a machine of the class described, the combination of a frame; a table supported by said frame and having a longitudinal groove therein; a cap feeding bar reciprocating in said groove; means for reciprocating said bar; means carried by said bar for positively feeding caps step by step along said table; a yielding chuck for engaging and holding the caps; a gasket-applying means for inserting a gasket in a cap; an acid-applying rod for applying acid to a cap; a soldering iron for applying solder to the cap; a spreading iron for spreading the solder on the cap; a forming die, and a cutting die for forming and placing a retainer in the cap; a soldering iron for heating the solder to secure the retainer to the cap; and reciprocating plungers for engaging the retainer for pressing the same against the cap after the same is soldered thereto.

17. In a machine of the class described, the combination of means for placing a sealing gasket in a cap, means for subsequently applying solder within the cap, means for forming and cutting a retainer and placing the same in the cap, and means for heating the solder to secure the retainer to the cap.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this eighth day of April 1912.

ALBERT K. KELLER.

Witnesses:

JAMES H. BELL,
E. L. FULLERTON.

[fol. 845] PLAINTIFF'S EXHIBIT No. 67

The Crown Cork and Seal Co.,
Baltimore, U. S. A.

January 20, 1932.

To: Dr. Warth.
From: M. Stover.
Subject: Al. Spot, Thermoplastic Cement.

A strip of Aluminum foil was coated in the Laboratory with Thermoplastic Cement, Du Pont 4620, sent to the 3rd Floor Assembling Machines. The stick was very good, and the spots well centered.

A few bottles of assorted beverages were put up under same and are now in the Dark Room.

(Signed) M. Stover.

The Crown Cork and Seal Co.,
Baltimore, U. S. A.

April 12, 1932.

To: Dr. Warth.
From: M. Stover.
Subject: Non Metallic Spot Crowns.

Five bottles of Canada Dry Ginger Ale were put up under the Glazed Paper Spot Crowns with Thermoplastic Cement, and five bottles with crowns taken from regular production with gutta percha adhesive. These are for direct comparison to show efficacy of Thermoplastic vs. Gutta Percha.

(Signed) M. Stover.

[fol. 846] The Crown Cork and Seal Co.
Baltimore, U. S. A.

April 20, 1932.

To: Dr. Warth.
From: M. Stover.
Subject: Thermoplastic Cement.

It has been found that 1 gallon of Thermoplastic Cement will coat 600 sq. ft. of varnished paper or foil to sufficient thickness to give a good adhesion and run well on the assembling machines on the Third Floor.

(Signed) M. Stover.

650

1 gal costs \$2.50.

600/sq. Ft.

144

144 ÷ 86400 sq. in. 600 gross/gal.
864

600/2.500 \$.004 per gross.

.0012

.0052 about .006

cost coat 1¢ sq. yd. = 1296 sq. in.

144 ÷ 1296

1152

144

8 gross = .010

1 gross = .0012

[fol. 847] The Crown Cork and Seal Co.,
Baltimore, U. S. A.

August 19, 1932.

To: Dr. Warth.

From: M. Stover.

Subject: Shellac Coated Paper, Irvington Varnish & Insulator Co.

Two bottles of Canada Dry Ginger Ale put up 3-17-32 under Irvington Shellac Coated Paper, Thermoplastic Cement were opened. The spots were in very good condition, but the Canada Dry Ginger Ale had a pronounced paper taste.

(Signed) M. Stover, Chemical Department.

The Crown Cork and Seal Co.,

Baltimore, U. S. A.

August 19, 1932.

To: Dr. A. H. Warth.

From: M. Stover.

Subject: Glazed Paper Spots.

Two bottles of Canada Dry Ginger Ale, one with Regular Glazed Paper Spot taken from the Third Floor and the other assembled with Thermoplastic Cement were opened.

[fol. 848] Bottled 4-12-32. Contrary to the usual run of these spots the Regular from the Third floor showed the spot to be in better condition than the Thermoplastic assembled disc. The Ginger Ale in each case had full flavor.
(Signed) M. Stover.

The Crown Cork and Seal Co.,
Baltimore, U. S. A.

August 25, 1932.

To: Chemical Director, A. H. Warth.
From: M. Stover.
Subject: Tin Spot Thermoplastic.

A bottle of white rock water put up 4-20-32 under tin spot with thermoplastic adhesive was opened. The tin spot was cut by the sharp edge of the locking ring, and the composition cork blackened. White Rock flavor O. K.
(Signed) M. Stover.

The Crown Cork and Seal Co.,
Baltimore, U. S. A.

October 20, 1932.

To: Dr. Warth.
From: M. Stover.
Subject: Parchment Spot Crowns.

Using 50 lb. Parchment Paper, a few Crowns were spotted using Gutta Percha and Thermoplastic as the adhesive.
[fol. 849] Three of each of these were placed on Arrow Special and pasteurized. Two were placed on White Rock Water.

(Signed) M. Stover.

Three of each of these Crowns were placed on Coca Cola.

PLAINTIFF'S EXHIBIT No. 68

May 11, 1932.

Mr. J. W. Cleaveland, Manager, Eastern Industrial Sales,
E. I. du Pont de Nemours & Company, Parlin, New Jersey.

DEAR SIR:

In reply to your letter of May 9th, we must confess that we have done nothing in particular with the V-7660 Tin

Decorating Varnish. The 4620 Thermoplastic Cement is active, as is also the E-1-1393 Water Repellent Lacquer.

We naturally hold to those materials which turn out well and it very often takes some time before we can see our way clear in introducing them for practical production purposes. It might interest you to know that the step of introducing a material from the Laboratory to the plant has become increasingly difficult with the very large number of materials offered by the trade. Very often when they are introduced it is necessary to meet some specific problem. A good example was the Du Lux Varnish which we had very little use for to begin with, and Du Lux Varnish is gradually going into production for coating paper as well as tin materials, and giving us a little better result than we could obtain with any other varnish.

Yours very truly, The Crown Cork and Seal Company, A. H. Warth, Chemical Director.

AHW/ms.

PLAINTIFF'S EXHIBIT No. 69

May 9, 1933.

Mr. Linn Case, Sales Manager, John Waldron Co., New Brunswick, N. J.

DEAR MR. CASE:

I am writing you at the direction of Mr. Foley of the Du Pont Co. A Mr. Goebel and myself expected to visit you last week. Mr. Foley, however, informed me that you would require the foil in width not greater than $19\frac{1}{2}$ " and would on a 3" I. D. core. Our stock here was $24\frac{3}{4}$ " and not of this core. We have, however, ordered $18\frac{1}{2}$ " wide foil to be wound on 3" I. D. cores, and in lengths of 250 yds. This material will be here in about one weeks time. Just as soon as it arrives we shall get in touch with you relative to proposition of coating same.

We have successfully coated foil here for the past several years but not on a production basis, and our interest in the matter has been probably explained to you by Mr. Foley.

Yours very truly, The Crown Cork and Seal Company, A. H. Warth, Chemical Director.

Job No. 1929 Supreme Court Record No. 72

[fol. 851] PLAINTIFF'S EXHIBIT No. 70

May 25, 1933.

Mr. Linn B. Case, John Waldron Corporation, New Brunswick, N. J.

DEAR MR. CASE:

The material which we coated at New Brunswick was slit and spooled here and run off on the machine. The product obtained was quite satisfactory. We of course, had some interruptions on the machine due to the fact that in the change from thinner to thicker coating, the coating was not quite continuous.

Just at the present we are arranging for the assembled Crowns to be put through a rough test to determine their safety for use in hoppers of trade machines.

There are several matters which Mr. Goebel and I would like to discuss with you before we make our next trip to New Brunswick, and would suggest that you stop over at Baltimore for the purpose, any time during the week except Saturday. Should the writer be out of town you would be able to see Mr. Goebel.

With kind regards.

Yours very truly, The Crown Cork and Seal Company, A. H. Warth, Chemical Engineer.

AHW/ms.

[fol. 852] PLAINTIFF'S EXHIBIT No. 71

June 23, 1933.

John Waldron Corporation, New Brunswick, New Jersey.

Attention Mr. L. B. Case

DEAR MR. CASE:

We have your letter of June 17th, and have arranged with Mr. Goebel to motor to New Brunswick on June 27th. Presumably we will reach your plant in the very early afternoon as we did the last time.

Will you kindly inform Mr. Foley or Mr. Heins so that they or their representatives may be present when we are making the run. They will supply the coating material, and Mr. Goebel and I will bring along the two rolls of foil.

Should you not be able to have things fully arranged for us kindly wire me on Monday, June 26th.

Yours very truly, The Crown Cork and Seal Company, A. H. Warth, Chemical Director.

AHW/ms.

[fol. 853] PLAINTIFF'S EXHIBIT No. 72

July 28, 1933.

Thermoplastic Coated Foil

The second run of coating aluminum foil with Thermoplastic Cement was made at the Waldron Co., June 27, 1933.

The foil was .002" thickness, 18" width, and 250 yards in length; sufficient to produce 17 spools of 1" width and similar length. One spool will yield about 70 gross of Spot Crowns.

Data on Run of June 27, 1933:

Foil: Alcoa	.002" thick
Width	18"
Length	250 yards
Dried Sheet	.0032" to .0036" thick
Dried Coating	.0012" to .0016"
Wet Coating	.0043" to .0050"
Temp. Zone No. 1	165° F.
" " No. 2	190° F.
" " No. 3	210° F.
" " No. 4	150° F.
Speed of Sheet	18 ft. per min.
Time to coat	40 minutes
Capacity	10 rolls per 8 hr. day
Gross equivalent (10 rolls)	12,000
Cement required	3 gallons per roll
Cost of Cement	1.50 per gallon
Material per gross	0.0038
Direct labor per gross	0.0006
Overhead (estimated)	0.0018

Total cost of coating ... 0.0062

[fol. 854] Estimated Cost Coating 27½" Foil:

Foil: Aluminum. 002" thick	27½" wide
Length	500 yards
Speed Sheet	28 ft. per min. (estimated)
Time to Coat	1 hour
Capacity	8 rolls per 8 hr. day
Spools 500 yard length	208 per day
Gross per spool	140
Total grossage	29,000 per 8 hr. day
Material per gross	.0038
Labor and overhead	.0020

Total cost of coating0058

About two 50 gallon drums of Thermoplastic Cement would be required for the days product.

(Sgd.) A. H. Warth, Chemical Director.

AHW/ms.

PLAINTIFF'S EXHIBIT No. 73.

August 30, 1920.

Mr. A. H. Warth, Chemical Engineer.

Subject: Resistance Paper

An investigation was started August 5th, 1920 to determine the method and materials for making Resistance Paper. The following information has been obtained;

[fol. 855] A Resistance Paper was made which was remarkably similar in properties to the product which we purchase. The formula used for making this paper follows:

Boiled Linseed Oil	85 parts
Process Varnish	50 "
Golden Black	10 "

The Process Varnish and the Golden Black were heated to drive off the solvent. When effervescence ceased the Boiled Linseed Oil was added and the whole heated to 400° F. The paper was dipped in the liquid and held submerged until effervescence ceased. The excess liquid was drained

1556

656

from the paper and the paper was baked one half hour at 150° C. The paper had a very slight tack which could not be removed by continued baking, but disappeared on seasoning 21 days.

A. A. Eisenberg, Factory Chemist.

AAE-S.

(Here follows 1 photo, side folio 856)

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[fol. 857]

PLAINTIFF'S EXHIBIT No. 75

June 30, 1927.

Production Department, Wm. Sutherland.
Chemical Director, A. H. Warth.
Burroughs Bros., Baltimore, Md.

We have been waiting months to hear the results on Glazed Paper Spot Crowns shipped to Burroughs Bros. and have asked Mr. Lindsay for report. As I recall we made up 50 gross against their order and these Crowns were shipped sometime ago.

Mr. Lindsay is under the impression that we were months getting the paper for the Crowns and that the matter was dropped and the Crowns were not shipped. Will you please advise when we received their order and also when it was shipped.

(Signed) A. H. Warth, Chemical Director.

AHW-S.

[fol. 858]

July 1, 1927..

Chemical Department, C. J. Parker.
Chemical Director, A. H. Warth.

Glazed Paper Spot Canax Crowns

Questions concerning the efficiency of Glazed Paper Spot Crowns on beverages are being asked by our Sales organization.

We have but one practical test on outside. This was in sealing Citrate of Magnesia. The Spot Crown has proven satisfactory for this purpose.

It will be necessary to extend our tests, particularly to Beer and Ginger Ale. I am ordering these beverages for the purpose. Please transfer sample Crowns to beverages when latter come in. As I recall it was tried on White Rock and Canady Dry and did not prove satisfactory for these beverages. The report on Canada Dry came from that firm.

(Signed) A. H. Warth, Chemical Director.

AHW-S.

(Here follow 4 photos, side folios 859-862)

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PLAINTIFF'S EXHIBIT NO. 80



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[fol. 863]

PLAINTIFF'S EXHIBIT No. 84

March 21 1933.

Ferdinand Gutmann and Company, Bush Terminal No. 19,
39th Street and Second Avenue, Brooklyn, N. Y.

Subject: Spot Crowns

GENTLEMEN :

In view of the recent favorable termination of litigation involving the issuance of patents covering foil and paper spot crowns, and the grant of patents thereon to the Crown Cork & Seal Company, Inc., we are now prepared to grant licenses under our line of patents covering spot crowns.

We direct your attention to the following recently issued patents:

1,899,782—Material for Facing Bottle Caps and Method of Making Same. Granted February 28, 1933.

1,899,783—Bottle Caps and Methods of Manufacturing Same. Granted February 28, 1933.

1,899,784—Bottle Caps. Granted February 28, 1933.

In addition to the foregoing patents the Crown Cork & Seal Company, Inc., is the owner of the following patents covering the same general subject matter:

1,339,066—Bottle Closures. Granted May 4, 1920.

1,788,260—Process of Producing Closures. Granted January 6, 1931.

If you desire a license to manufacture spot crowns under these patents we will be pleased to hear from you.

Yours very truly, — — — President.

Final Hearing March 29, 1934.

IN THE UNITED STATES PATENT OFFICE

Patent Interference No. 66,201

WARTH

VS.

JOHNSON

Method of Manufacturing Bottle Caps and Apparatus
Therefor

Application of Albin H. Warth filed April 4, 1933, Serial
No. 664,410.

Patent granted John A. Johnson April 5, 1932, No. 1,
852,578, on application filed November 26, 1929, Serial No.
409,793.

Messrs. Cushman, Darby & Cushman for Warth.
Mr. John O. Seifert for Johnson.

The invention in issue resides in a method of applying
a metallic foil lining or "spot" to the cork sealing pad
of the usual crown bottle cap. It is fully set forth in rep-
resentative count 1, which reads as follows:

1. The method of assembling linings for sealing pads in
[fol. 865] receptacle closure caps, consisting in providing
caps with sealing pads therein and a web of lining material
arranged with an adhesive surface non-viscous at normal
temperature, heating the pads in the caps, and severing
linings from the web of lining material and assembling the
linings as they are severed from the web in the caps with
the adhesive surface in contact with the heated pads to
render the adhesive viscous and effect adhesion of the
linings to the pads.

By stipulation, the only question presented is whether
or not the original disclosure of an earlier Warth applica-
tion, No. 159,743, supports the issue counts. It is stipu-
lated that if it does support the counts, priority of invention
shall be awarded to the party Warth.

This question was raised by a motion to shift the burden of proof brought by Warth during the interlocutory motion period. The motion to shift was denied upon the ground that it had not been established beyond a reasonable doubt that the earlier application supported the issue, citing *Munro vs. Alexander*, 1903 C. D. 334.

The question is now raised for final determination under Rule 130. Evidence has been presented with regard to the meaning of certain terms, and with regard to other matters bearing upon the proper construction of the specification of the Warth application, No. 159,743. At this stage, therefore, Warth is entitled to a consideration of the question *de novo*, and the burden upon him is decreased to the usual burden of proof placed upon a junior party.

The only limitation in the issue as to which there is any [fol. 866] question is that which requires that the cork pads in the caps be heated prior to the assembly of the spots in the caps. The remaining limitations in the issue are undoubtedly supported by the original disclosure of Warth application 159,743. Warth relies upon the following sentences to support the limitation in question:

"It may be desirable to secure the spot in position, prior to the heat and pressure steps, sufficiently to prevent dislodgment of the spot during any interval between assembling and final sticking. This may be accomplished, for example, *by preheating the assembled crown, to soften the coating, as soon as the metal foil spot is deposited.*" (Italics added.)

In the decision on the motion to shift the burden of proof it was pointed out that in view of the use of the term "assembling" to describe the step of combining the spot with the cork pad of the cap, the phrase "assembled crown" would seem to refer to the complete spot center cap. In which case the so-called "preheating" of the "assembled crown" would have to take place subsequent to assembly of the spot. It was further pointed out that this construction was supported by the comma after "coating", which comma made the phrase, "to soften the coating", parenthetical.

The party Warth has now submitted uncontroverted evidence that the term "assembled crown" is applied in the bottle cap art to the combination of the usual metal shell

and the cork sealing pad. These "assembled crowns" are [fol. 867] apparently made independently of the "spotting" operation, covered by the present issue, and are usually used without the spot center. For certain purposes, however, spot center crowns are preferred.

It is further pointed out that the term "assembled crown" is nowhere in the early Warth specification applied to the complete spot center crown. The latter is referred to in several places as an "assembled unit".

Of course, if the phrase "assembled crown" is construed to mean a crown having no metallic spot therein, the comma after "coating" renders the sentence conflicting. In a case of this kind, however, punctuation may be ignored if the correct meaning would be apparent to one skilled in the art. And it is urged by Warth that in spite of the comma a person skilled in the art would necessarily understand that the quoted sentence described a method involving the application of heat to the cork pad prior to the application of the spot.

This raises a question which has been given careful study. Without going into detail it may be stated that it seems clear that the sentences in question refer to a method involving the application of a spot to the cork pad, and a subsequent application of heat and pressure to complete the union of the two. Moreover they state that it may be desirable to secure the spot in position prior to the heat and pressure steps, and that this may be accomplished "by preheating the assembled crown". It was suggested in the prior decision that this language could be construed to set forth a method in which the assembled spot center crown was preheated between the time the spot center [fol. 868] was applied and the time when the heat and pressure were applied. If it is not so construed, however, it is believed fair to state that it set forth the step of preheating the cork pad in the cap prior to the application of the spot center thereto, and that therefore it supports the issue here.

It is contended by Warth that the first construction is so unreasonable from a practical standpoint that it would not occur to one skilled in the art from the language used. In this connection it is pointed out that the early Warth specification states that the method disclosed therein can be performed upon the usual assembling machinery previously used to deposit metal foil disks upon the cork pads

and secure them in place. Attention has been called to the patents to McManus, No. 1,402,780, and Alberti, No. 1,401,300, showing machines for this purpose. In these machines the caps are passed intermittently in single file beneath a reciprocating punch, which cuts the metal foil disk from a strip and deposits it upon the cork pad. The caps then pass to an immediately adjacent heated plunger which applies sufficient heat and pressure to complete the union. It was agreed by both parties at the hearing that machines of this character were used commercially prior to 1927 and that they operated at high speed.

It is urged by Warth that it would be absurd to suppose that the sentences in question referred to a method wherein heat was applied between the assembling operation and the operation of the heated plunger which accomplishes final sticking, because the time interval in commercial machines between these two operations is negligible. Moreover, at [fol. 869] the hearing it was conceded by the attorney for Johnson that such a procedure would be impractical.

In addition it is urged that the stated purpose of the preheating, viz., to prevent dislodgment of the spot during any interval between assembly and final sticking, would suggest that the initial sticking took place as soon as the spot was deposited. In which case the heat would necessarily have to be applied prior to the time of assembly. Likewise, it is pointed out that the term "preheating" very inaptly describes the application of heat subsequent to the time when the spot is applied. While, in itself, the presence of such language is not controlling, it undoubtedly renders the two sentences peculiarly subject to the construction urged by Warth.

A patent specification is addressed to those skilled in the art, and it must be read in the light of what was known in the art to which it appertains at the time the application was filed. Moreover, its terms must be given the meaning ordinarily given such terms by those familiar with the art. In view of these well established principles, the uncontroverted evidence respecting the meaning of the phrase "assembled crown", and respecting the prior practices in the bottle cap art, must be given weight in construing the two sentences relied upon to support the limitation in question. It is believed that the showing made, together with the admissions of the attorney for Johnson, is sufficient to indicate that the intended meaning, and the meaning

which would be gathered by one skilled in this art from the early Warth specification, is in accordance with the [fol. 870] issue. Under these circumstances, the inclusion of the comma after "coating" must be considered inadvertent.

Accordingly, it is held that the issue counts are supported by the original disclosure of the Warth application, No. 159,743. In view of the previously mentioned stipulation, priority must be awarded to the party Warth.

Priority of invention of the subject matter in issue is hereby awarded to Albin H. Warth, the junior party.

Limit of appeal: May 4, 1934.

W. O. Houston Examiner of Interferences, Room 3098.

April 14, 1934.

[NOTE—The record of this interference is marked Defendant's Exhibit YYYY, page 1887 of this record.]

[fol. 871]

PLAINTIFF'S EXHIBIT No. 86

390

Department of Commerce, United States Patent Office

To all persons to whom these presents shall come, Greeting:

This is to Certify that the annexed is a true copy from the records of this office of Papers 1, 50 and 62, in the matter of Interference Number 60,878, Warth vs. Lange, Subject Matter: Adhesive Backing.

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this fifth day of April, in the year of our Lord one thousand nine hundred and thirty-five and of the Independence of the United States of America the one hundred and fifty-ninth.

Conway P. Coe, Commissioner of Patents. (Seal.)

Attest: D. E. Wilson, Chief of Division.

[fol. 872]

50, Room 322

Letter No. —

Address only "The Commissioner of Patents, Washington, D. C."

Department of Commerce, United States Patent Office,
Washington

Nov. 28, 1930.

Examiner of Interferences:

An interference is found to exist between the following cases, and in respect to the invention therein specified, to wit:

Cases

1. Name Albin H. Warth.

Post office address: 29 York Court, Baltimore, Maryland.

Title: Material for Facing Bottle Caps and Method of Making same.

Filed Dec. 17, 1929, Ser. No. 414,614.

Attorney: Cushman, Bryant & Darby of Washington Loan & Trust Bldg., Washington, D. C.

Assignee: Crown Cork & Seal Compound, Inc., of New York, N. Y. (a Corp. of New York).

[fol. 873] 2. Name: Louvern G. Lange.

Post office address: 39 High St., Passaic, New Jersey.

Title: Adhesive Backing

Filed July 3, 1929, Ser. No. 375,883 Pat'd. May 13, 1930.
No. 1,758,610.

Attorney: Pennie, Davis, Marvin & Edmonds of 165 Broadway, New York, N. Y.

Intf. Number 60878.

Intf. Declared Dec. 20, 1930.

Statements Due Jan. 19, 1931.

Invention

Count 1. As a new article of manufacture, paper having a high gloss and having a coating of varnish on one surface of the paper and a coating of gutta percha on the other surface thereof.

The relation of the counts of the interference to the claims of the respective parties is as follows:

Count	Warth	Lange
1	7	1

Ch. Blake, Examiner.

Counts Compared.

[fol. 874] Final Hearing June 16, 1932

HHH/c.

IN THE UNITED STATES PATENT OFFICE

Patent Interference No. 60,878

WARTH

v.

LANGE

Adhesive Backing

Application of Albin H. Warth, Filed December 17, 1929,
No. 414,614

Patent Granted Louvern G. Lange May 13, 1930, No. 1,758,
610, on Application Filed July 3, 1929, No. 375,883

Messrs. Cushman, Bryant, Darby and Cushman for
Warth.

Messrs. Pennie, Davis, Marvin and Edmonds for Lange.

This is an interference involving the senior party, Lange,
as a patentee and the junior party, Warth, as an applicant.

The issue is expressed in a single count which reads as
follows:

1. As a new article of manufacture, paper having a high
gloss and having a coating of varnish on one surface of the
[fol. 875] paper and a coating of gutta percha on the other
surface thereof.

The junior party Warth, has alone taken testimony. Both
parties have filed briefs and were represented by counsel
at the hearing.

Both parties have alleged date of conception and reduction to practice some ten years or more prior to their respective filing dates. Warth has offered some evidence to support this early date, as alleged, but the greater portion of his record relates to work of much later dates and this evidence alone will be here discussed as it is entirely sufficient for this decision.

The proof of the major facts of Warth's case appears to be subject to no great attack by Lange. However, their legal effect is the subject of considerable difference of opinion.

Some pertinent facts of Warth's case that are deemed fully established may be briefly summarized as follows:

Warth is the Chemical Director of Crown Cork & Seal Company of Baltimore, Maryland, where he has been employed for some fifteen years. At least as early as 1927 the Crown Cork & Seal Company had been making crown caps known as spot crowns which were used as bottle caps, being commonly employed with bottles containing soft drinks, vinegar, cider, etc. The spot crowns made during 1927 comprised a metal crown with a cork disk inserted therein upon which was fastened a spot of metal, such as aluminum foil, by means of a gutta percha coating between said spot and cork disk. The spot was applied by first making a composite tape from a spool of gutta percha and a [fol. 876] spool of foil combined on a machine similar to that shown by Warth Exhibits 2 and 3. This tape was then fed to a spotting machine where the spot was applied to the cork disk.

The gutta percha rolls used were purchased from the Bishop Gutta Percha Company.

On or about May 5, 1927, there was made by the Crown Cork & Seal Company, at the direction of Warth, a composite tape spool wherein varnish coated express paper was substituted for the metal foil, which tape was used in spot crowns in place of the previously manufactured metal spot crowns. (Smith Qs. 79-88, Qs. 93-110, 178-184; Warth Qs. 14-30, Warth Exhibit 4.) It is freely admitted by Warth and certain of his witnesses that the varnished paper used to make this composite tape was purchased from the Standard Insulation Company of which the party Lange is president (Smith Q. 186, Warth X Q. 112, R. D. Qs. 44-47). The composite tape formed by the combined varnish express

paper and gutta percha, which was used to make these spot crowns fully supports the count.

The said varnish paper spot crowns made at the above date were to fill an order from Barrow Brothers of Baltimore for fifty gross of double-lacquered glazed paper spots to be used for sealing Citrate of Magnesia. This order was at least partly filled on or about May 6, 1927, as is established by the testimony of Smith (Smith Qs. 116-124); Warth (Warth Qs. 17-19; Q. 30); and LaCourse (LaCourse Qs. 19-41, Q. 45) and Warth Exhibits 5, 6, 8, 9, 56, and 57. These crowns proved satisfactory according to the testimony of each of the above witnesses.

[fol. 877] The above considered evidence is deemed to establish that the invention in issue was conceived and reduced to practice by Warth not later than May 5, 1927, when the composite tape made of the combined varnish express paper and gutta percha coating was made in the factory of the Crown Cork and Seal Company which tape was found satisfactory to produce spots in spot crowns produced therefrom. Whether or not Warth is entitled to any earlier date for either conception or reduction to practice is immaterial to this decision and is therefore not passed upon.

Rather conclusive evidence has been offered of subsequent sales of spot crowns similar to those sold to Barrow Brothers, to the Macomber Orchard Company of Sonora, California. However, in view of the above holding no detailed discussion of this evidence is deemed necessary.

The question of originality is raised in this case by a direct allegation by Warth that the method employed in coating paper with gutta percha, above noted, was disclosed to Lange by himself during a visit of Lange at the plant of the Crown Cork and Seal Company in 1928 (Warth Q. 77). Lange, having taken no testimony, does not deny this allegation.

The method of coating varnish paper with gutta percha, as above outlined, was carried on by the Crown Cork and Seal Company until early in 1929 at which time arrangements were made whereby the varnished paper was shipped from the Standard Insulation Company to the Bishop Gutta Percha Company in large rolls, the latter to coat the paper with gutta percha, cut it into rolls of about 1 inch width, and send it to the Crown Cork and Seal Company (Reed Q. 81; [fol. 878] Warth Q. 47; Qs. 64-71; Qs. 113, 114). These ar-

rangements were apparently completed about March 28, 1929, as evidenced by Warth Exhibit 19-C.

Warth has introduced into evidence as Exhibit 44 a carbon copy of a letter written by himself to Lange on February 12, 1929. This letter refers to the arrangements made whereby the Bishop Gutta Percha Company was to coat the rolls to be supplied by the Standard Insulation Company and thereby contains a disclosure of the invention in issue. Warth Exhibit 18-A dated February 14, 1929, indicates that Lange was in Seattle, Washington, when the letter, Warth Exhibit 44, was written but he must have returned prior to March 27, 1929, when according to Reed's testimony (Reed Qs. 75-81) Lange visited the plant of the Bishop Gutta Percha Company and was disclosed the process whereby that Company proposed to coat varnished paper with gutta percha. Note also Warth Exhibits 19-C and 20. This disclosure to Lange by Reed as well as the letter, Warth Exhibit 44, constituted additional disclosures of the invention in issue to Lange from Warth.

The testimony above considered not only establishes conception and reduction to practice of the invention in issue by Warth at least as early as May 5, 1927, but also established disclosure of the invention in issue to Lange from Warth prior to Lange's record date.

It has been urged by Lange that certain Cross Exhibits show that Warth derived the invention from Lange. However, Lange has failed to produce a single cross exhibit [fol. 879] dated prior to May 5, 1927, or in fact prior to March 28, 1929, which shows Lange to have been in possession of the invention in issue.

Warth having made out a prima facie case of prior inventorship as well as a prima facie case of his being the original inventor of the invention in issue he is entitled to an award of priority.

The request by Lange that this interference be referred to the Commissioner for dissolution without an award of priority under *Weston v. Jewell*, 1902 C. D. 20 has been duly considered. The basis for this request is an alleged admission of public use and sale by Warth more than two years prior to his filing date. However, no unequivocal admission of public use or sale of the precise invention in issue, as these terms are employed in the patent statutes, is found in Warth's testimony which is sufficient to warrant such a recommendation. The request is therefore denied.

Priority of invention of the subject matter in issue is hereby awarded to Albin H. Warth, the junior party.

Limit of appeal: July 20, 1932.

J. P. Disney, Examiner of Interferences, Room 3714.

June 30, 1932.

[fol. 880] Appeal No. 6045. Paper No. 62

Decision

Appeal No. 6045

MSF

Hearing: Oct. 7, 1932.

IN THE UNITED STATES PATENT OFFICE

Before the Board of Appeals

WARTH

v.

LANGE

Patent Interference No. 60,878, between the application of Albin H. Warth filed Dec. 17, 1929, Serial No. 414,614 and patent granted Louvern G. Lange May 13, 1930, No. 1,758,610 on application filed July 3, 1929, Serial No. 375,883. Adhesive Backing.

Cushman, Bryant, Darby & Cushman for Warth.
Pennie, Davis, Marvin & Edmonds for Lange.

The party Lange appeals from the decision of the examiner of interferences awarding priority of invention of the subject matter in issue to the party Warth.

Lange has advanced a large number of reasons for his appeal, but his argument is based primarily upon the alleged [fol. 881] ground that Warth's testimony constitutes an admission on his part that the invention in issue was on sale and in public use more than two years prior to his filing date, namely, December 17, 1929. Lange contends that since he is a patentee the only question before the Office is whether a patent may be granted to Warth, and that in view of Warth's alleged admission the interference should be dis-

solved without deciding the question of priority. In support of this contention Lange relies upon the decision in *Weston v. Jewell*, 1902 C. D. 20.

If, as contended by Lange, the party Warth has definitely and unequivocally admitted that the subject matter in controversy was in public use or on sale more than two years prior to the filing of his application, or if he has admitted facts from which such conclusion would necessarily follow, the interference unquestionably should be dissolved, without judgment on the question of priority, as the Patent Office does not conduct useless proceedings nor decide moot questions.

In order to determine whether the subject matter in issue was admitted by Warth to have been in public use or on sale more than two years prior to the filing of Warth's application, it is necessary to ascertain the nature of said subject matter which is defined as follows:

"As a new article of manufacture, paper having a high gloss and having a coating of varnish on one surface of the paper and a coating of gutta percha on the other surface thereof."

As thus defined the subject matter of the issue contains four limitations: first, it must be "an article of manufacture" [fol. 882]; second, said article of manufacture must be "paper having a high gloss"; third, said paper must have "a coating of varnish on one surface"; and, fourth, it must have "a coating of gutta percha on the other surface."

Lange contends that Warth's admissions are to be found in the testimony of Warth's witnesses Smith and Irving and in his own testimony. That part of Lange's brief which deals with this testimony may be quoted as follows:

"The Warth testimony constitutes an admission that the invention was in public use and on sale more than two years prior to the Warth filing date. According to Warth's witness Smith the manufacture of glazed paper spot crowns embodying the invention here in issue was commenced in May, 1927 (R., p. 10, Q. 78; R., p. 11, Q. 90; R., p. 17, Q. 141). These spot crown caps were made by the use of machines placed in regular commercial operation early in 1927.

'Q. 76. State whether the two machines built in 1927 were used in experimental or commercial work after being placed in operation?

'A. Commercial work.'

The witness Smith testified that the first order for spot crowns embodying the invention was filled in May, 1927, and a large order in September, 1927 (R., p. 17, Qs. 141, 143; R., p. 63, X Q. 12; R., p. 67, X Qs. 43, 44, 46 and 47; R., p. 69, X Q. 63). The following portions of Smith's testimony are particularly pertinent:

[fol. 883] 'X Q. 12. You have testified with reference to Exhibit 5 to the effect that the first sale of glazed paper spot crowns occurred on May 5, 1927. That is the first commercial sale, is it not?

A. It is. Was that question as to the glazed paper spots?

Mr. Jackson: Yes.

A. That is the first sale' (R., p. 63).

'X Q. 46. Was not the sale made on May 5, 1927, an ordinary commercial transaction?

'A. It was, yes.' (R., p. 67).

'X Q. 62. When were the coating machines put into operation first in 1927?

'A. You are calling them coating machines, and we have been calling them combining machines. The combining machines were put in operation about the first part of February, 1927.

X Q. 63. That was regular commercial operation?

'A. That is right.

X Q. 64. When were they first used for combining gutta percha tissue to paper?

'A. Around about May 5' (R., p. 69).

Warth himself testified that sales of glazed paper spot crowns embodying the invention, were made to Burrough Brothers of Baltimore in May, 1927, and to the Macomber Orchard Company in September, 1927 (R., pp. 102, 103, 104).

On page 140 of the record in answer to X Q. 129 Warth stated:

'No, I don't recall examining the records until very re- [fol. 884] cently. I do know that we made up the glazed

paper spot crowns in the summer of 1927 in small quantities; particularly, I recollect the large order that was made up for the Macomber Orchard Company in September, 1927.'

The witness, Fred E. Irving, manager of the Macomber Orchard Company, testified that an order for 150 gross of the glazed paper spot crowns was filled in September, 1927, after a gross of glazed paper spot crowns had been tested by the Macomber Orchard Company for a period of several months and had been found to be satisfactory (R., p. 185, X Qs. 20, 21; R., p. 186, X Qs. 26 to 29, inclusive). This large order supplied to the Macomber Orchard Company was paid for by check in the regular course of business according to the testimony of Mrs. Irving (R., p. 189, Q. 19).

According to witness Smith the product here in issue was commercially used on the regular assembly machine in the plant of the Crown Cork and Seal Company in the summer of 1927.

'Q. 178. Now, as to the method of manufacture or assembling, what method was used in the assembling of paper and gutta percha crowns?

A. Simply using the standard practice of combining the paper and gutta percha, using a special machine built for that purpose, and then assembling on the regular assembling machine' (R., p. 21).''

It appears from the above quoted testimony that the [fol. 885] "article of manufacture" which was actually in public use or on sale was a finished cap having a center spot of paper coated with varnish on its exposed surface and coated with gutta percha on its opposite surface. This paper so coated did not have an existence as an "article of manufacture" apart from and independent of the lined cap, but was formed during the process of forming the cap. While it is true that the paper lined cap constituted an article of manufacture, yet the paper which formed the lining may not be so regarded under the generally accepted definition of an article of manufacture.

Robinson in his Law of Patents defines an article of manufacture as follows:

"A manufacture is an entity distinct from the substances of which it is composed, and from the instruments or art

by which it is produced. It is an instrument by itself, embodying a separate and complete idea of means, and derives from this idea its own essential character. If known already to the arts, its production by a new process or by new instruments cannot make it new; nor if unknown is it the less a new invention that the agencies or methods by which it is now evolved are old. As to all the conditions required to render it a patentable invention it must stand or fall alone."

"A manufacture may consist of a single instrument, or of a combination of instruments which act together for a common purpose. The instrument is single where none of the parts of which the manufacture is composed could be [fol. 886] used without other parts in the production of mechanical effects. But where two or more single instruments are united in a new instrument, and co-operate with each other in the production of an effect beyond the sum of the effects of the individual instruments, they form a combination which is a new manufacture" (Vol. 1, page 270).

As to priority, Lange took no testimony, and he is therefore confined to the date of filing of his application, namely, July 3, 1929. The record, however, discloses the fact that Warth was in possession of the article of manufacture defined by the issue before Lange filed, as evidenced by Warth's Exhibits 25, 44, 45, 18-A to 18-F and 19-A to 19-S. Reference is particularly made to Warth's Exhibit 44, a letter addressed to Lange by Warth, in which occurs the following statement:

"My scheme is to coat the roll of paper or foil with gutta percha instead of using said materials in conjunction with the tissue. There are several reasons for doing it in this way. One reason of immediate importance concerns the crown assembling proposition in some of our foreign plants. It would be simpler for one of our foreign plants which does not have much experience with spot assemblies to secure their paper or foil all ready coated with gutta percha and ready to use. There would also be some saving in the cost and less wastage in the machine.

I think you will also find that gutta percha lined varnished [fol. 887] cambric and gutta percha lined varnished paper may have some application in the electrical industry.

It might be well worth your while to meet Mr. Reed, who has my confidence and whom you can trust in any business negotiation. Mr. Reed has also requested a desire to meet you and stated to me that he would call at your plant.

For our particular purpose here he suggested that we arrange to have you ship to him 100 yards of 36" width glazed paper that we use for spot crowns. He will coat this paper with gutta percha, slit same into specified width and then ship the spooled material to Baltimore. If this experiment proves successful and economical we can arrange matters in such a way that we may get the gutta percha coated glazed paper directly from the Bishop Gutta Percha Company, or at least that portion which may be shipped to Toronto, Montreal, Havana and any of our foreign plants."

Lange's cross-exhibits have no controlling bearing on the questions involved.

In view of the above, we find no error in the decision of the examiner of interferences awarding priority of invention of the subject matter in issue to the party Warth, and his decision is accordingly affirmed.

M. J. Moore, Assistant Commissioner; W. S. Ruckman, Examiner-in-Chief; J. W. Chip, Examiner-in-Chief, Board of Appeals.

October 17, 1932.

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PAGE

676

888

PLAINTIFF'S EXHIBIT No. 87

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE

To all persons to whom these presents shall come, Greeting:

THIS IS TO CERTIFY that the annexed is a true copy from the records
of this office of the File Wrapper, Contents and all
Drawings, in the matter of the

Letters Patent of

John A. Johnson,

Number 1,852,578,

Granted April 5, 1932,

for

Improvement in Methods and Apparatus for Assembling Linings in
Receptacle Closure Caps.

IN TESTIMONY WHEREOF I have hereunto set my
hand and caused the seal of the Patent Office to be
affixed, at the City of Washington, this fourth
day of April, in the year of our Lord one
thousand nine hundred and thirty-five and of the
Independence of the United States of America the
one hundred and fifty-ninth.

ATTEST:


J. D. Sullivan
Chief of Division

Conway P. Cox
Commissioner of Patents.

16
17
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889

1852578

NUMBER (Series of 1932)

409793

DIV. 14

PATENT NO.

DATED

APR 5-1932

(EXR'S BOOK)

23-249
(10)Name JOHN A. JOHNSONof WOODHAVEN,
State of NEW YORK

Invention

METHOD AND APPARATUS FOR ASSEMBLING LININGS IN RECEPTACLE CLOSURE

ORIGINAL

RENEWED

APPLICATION FILED COMPLETE NOV 26, 1929

Petition, Specification,	<u>NOV 26</u>	1929
Oath, First Fee \$80,	<u>NOV 26</u>	1929
<u>9</u> sheets Drawings,		
15 EXTRA CLAIMS \$75.	<u>NOV 26</u>	1929

Examined and passed for Issue Sept 19, 1931By Ex. Dir. 14Notice of Allowance Sept 19, 1931Final Fee Mar 9, 1932Attorney JOHN O. SEIFERT 277 BROADWAY NEW YORK N.Y.

Associate Attorney

No. of Claims Allowed 30 Print Claims 1 and 28 in O. O. Class 113-80Title as Allowed Method and Apparatus for
Assembling Linings in Receptacle Closure Caps

677

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300.—Petition for Letters Patent.

75-550.

JULIUS BLANCHARD, INC., LAW BLANK PUBLISHERS

71 BROADWAY AND 1 BATTERY ST., NEW YORK

U. S. P. O. Form 100, revised January, 1909

NOV 26 1923

U.S. PAT. OFFICE

Petition

40475

409798

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To the Commissioner of Patents:

Your Petitioner JOHN A. JOHNSON,

U.S. PATENT OFFICE

DEC 4 1923

DIVISION 16

citizen of the United States and residing at Woodhaven,

in the County

of Queens, City and State of New York.

and whose Post Office

address is 84-16-86th Street, Woodhaven, N.Y.

prays that Letters Patent

may be granted to him for the Method and Apparatus for assembling linings in Receptacle Closure Caps,

set forth in the annexed specification; and he hereby appoints JOHN O. SWIFT, (Regis-
tration #8820) of 277 Broadway, New York, N.Y., -----his attorney with full power of substitution and revocation,
to prosecute this application, to make alterations and amendments therein, to receive the patent, and to
transact all business in the Patent Office connected therewith.Inventor's Signature,
Full Name.*John A. Johnson***Specification.**

To all whom it may concern:

Be it known that JOHN A. JOHNSON, acitizen of the United States and resident of Woodhaven,in the County of Queens, City and State of New York,

have invented certain new and useful Method and Apparatus for Assembling linings in Receptacle Closure Caps, -----

of which the following is a specification

Fly

This invention relates to assembling and adhesively securing an impervious lining to sealing pads in closure caps of the type known as "crown caps" by the heating of sealing pads in the caps, the inserting of the linings having an adhesive surface normally non-viscous in the caps with the adhesive surface abutting the heated pads rendering the said adhesive surface of the linings viscous to adhere to the pads, subjecting the pads and linings to heat and pressure to assure an intimate adhesion between the linings and pads and subjecting the caps with the pads and linings to pressure during the cooling thereof, and it is the primary object of the invention to provide an improved method and apparatus for this purpose that are highly efficient in use.

By the method and apparatus now in use for this purpose the caps with the pads before the assembling of the linings therein are passed through a zone having an elevated temperature provided by a series of gas flames which scorch the pads with the result that the assembled caps are not acceptable by merchandisers or users of the caps, and it is another object of the invention to overcome this disadvantage by providing electric heating means to produce the elevated temperature zone, which means is adjustably mounted in superposed relation to the exposed surface of the cap pads and adapted to be moved from said position to a position away from the caps when the apparatus is inoperative and thus prevent scorching of the pads and a consequent destruction of the caps.

It is still another object of the invention to provide an improved and novel means to control the delivery of caps having sealing pads from a hopper ^{to means} to feed the caps to the

26
3 means to assemble the lining on the pads.

It is a further object of the invention to provide improved means to positively feed a web of impervious material from a roll of such web to punch and die mechanism to sever linings from the web and said feeding means adapted to be rendered inoperative when there are no caps on the cap feeding means relative to the punch and die mechanism, and to maintain a slack portion of the web between the roll of web and punch and die mechanism and thus prevent a sudden strain on and breaking of the web.

A further object of the invention is to provide means to guide the web of impervious material to punch and die mechanism and centrally position lining disks severed from the web relative to a pad in a closure cap.

Another object of the invention relates to means to place the impervious linings assembled on the pads in the caps under heat and pressure to render an intimate adhesion between the linings and pads.

The embodiment of the invention comprises a punch and die mechanism to which closure caps of the crown type having sealing pads therein are fed from a hopper by a slide depositing the caps with the pads exposed relative to a reciprocating member and delivered by said latter member to feed mechanism and intermittently fed by said mechanism along a support for the caps to the punch and die mechanism through a zone having an elevated temperature produced by an electric heating unit adjustably mounted superposed to the pads in the caps to heat the pads and adapted to be automatically moved to a position remotely of the caps when the apparatus is rendered inoperative. To provide and assemble impervious linings in the caps centrally of the pads a web of impervious material having an adhesive surface normally non-viscous is fed to the punch and die mechanism by means adapted to be

rendered inoperative when no caps are positioned by the feed mechanism adjacent the punch and die mechanism. Lining disks are severed by the punch and die mechanism from the web and positioned by the punch in co-operation with a guide and support for the web centrally of and with the adhesive surface of the linings contiguous to the cap pads, the adhesive surface being rendered viscous through the heat of the pads. To effect an intimate adhesion between the linings and pads the caps with the pads and linings assembled therein are moved by the feed mechanism from the punch and die mechanism to means to place them under heat and pressure comprising electrically heated plungers actuated in synchronism with the punch and die mechanism and impinged against the linings and pads in the caps. To insure the complete adhesion between the linings and pads before discharging the assembled caps from the apparatus the caps are delivered from the electrically heated plungers to means to maintain the linings and pads under pressure during the cooling thereof.

In the drawings accompanying and forming a part of this application, Figure 1 is a side elevation of apparatus illustrating an embodiment of the invention and shown with the parts in inoperative condition.

Figure 2 is a view of the apparatus looking at the top of Figure 1.

Figure 3 is a plan view of the right hand end portion of the apparatus on an enlarged scale and partly in section.

Figure 4 is a sectional view taken on line 4-4 of Figure 3 looking in the direction of the arrows.

Figure 5 is a fragmentary elevational view of the central portion of the apparatus showing the actuating mechanism for the web feeding means.

Figure 6 is a sectional view taken on the line 6-6 of Figure 5 looking in the direction of the arrows.

Figure 7 is a detail view in perspective of controlling means for the actuating mechanism of the web feeding means.

Figure 8 is an end view of a detail of the actuating mechanism of the web feeding means.

Figure 9 is a perspective view of ^aweb impinging roller carrier of the web feeding means.

Figure 10 is an elevational view partly in section, of punch and die mechanism and electrically heated pressure plungers.

Figure 11 is a sectional view of the punch and die mechanism taken on line 11-11 of Figure 10 looking in the direction of the arrows.

Figure 12 is a sectional view on an enlarged scale of the punch and die mechanism in position after severing a lining disk from the web and means to actuate a plunger to strip the severed disk from the punch and impinge it against the pad in a cap.

Figure 13 is a view similar to Figure 12 of the punch and die mechanism showing the punch positioning a severed lining disk in a cap centrally of the cap pad and the plunger about to impinge the severed lining against the pad in a cap.

Figure 14 is a view similar to Figure 13 of the punch and die mechanism and showing the plunger impinging the severed lining against the pad in a cap.

Figure 15 is a view similar to Figure 14 showing the punch receding and the plunger impinging the severed lining against the pad of a cap and stripping it from the punch.

Figure 16 is a sectional view of a heated plunger to place a lining and pad assembled in a cap under heat and pressure and showing the same in relation to a portion

of the punch and die mechanism.

Figure 17 is a cross sectional view taken on the line 17-17 of Figure 16 looking in the direction of the arrows.

Figure 18 is a sectional plan view of means to guide the lining web relative to the punch and die mechanism.

Figure 19 is a plan view of a web roll and means to guide and feed the web from the roll to the punch and die mechanism.

Figure 20 is a side elevation looking at the bottom of Figure 19; and

Figure 21 is a sectional view taken on the line 21-21 of Figure 20 looking in the direction of the arrows, to show the connection between the means to feed the web to the punch and die mechanism with the means to feed the web from the web roll.

In the embodiment of the invention illustrated the operative parts are mounted upon a suitable framework comprising a table T supported upon standards S.

The caps C having sealing pads P usually of a cork composition adhesively secured therein, are delivered from a hopper (not shown) by a chute or slideway 14 arranged with flanged sides and top to prevent the caps from jamming or leaving the chute, and having a pivotally mounted gate 15 at the lowermost portion of the chute operated by a lever 16 to control the delivery of the caps from the chute, Figure 1. The caps are delivered from the chute to a tunnel-shaped guide member 17 extended from the end of a chute 14 in an arcuate direction, said guide being superposed and opened to the peripheral portion of a disk 18 rotatably supported by a sleeve 19 mounted on the table T to extend from the opposite faces thereof. The disk is rotated by a shaft rotatably carried by the sleeve 19 to extend from the ends of the sleeve with one end of the shaft fixed to the

disk and having a pinion 20 fixed at the opposite end meshing with a pinion 21 fixed to a horizontal extending drive shaft 22 rotatably mounted in ^{-ings} bearings 23 carried by the table T and standards 3. The caps are moved from the outlet of the chute 14 along the member 17 by the rotation of the disk 18 to a position at the end thereof in alinement with a space between a pair of spaced rails 24 mounted above and parallelly of the table T by a series of supports 25 and having the opposite edges bevelled, as at 26, Figure 3, for the slidable support of the caps at opposite skirt portions to prevent the scratching or marring of the decorative surface thereof.

The caps are intermittently advanced or fed along the rails 24 by a feed rack embodying a plate 27 carried by a slide 27' mounted in recesses 28 of the supports 25 for one of the cap supporting rails 24 (Figure 4) to have longitudinal and lateral movement. The plate is arranged with laterally extending fingers or projections forming spaced recesses 29 substantially of the size and shape of the caps to engage the caps laterally and feed the same along the rails 24 by a reciprocatory movement thereof consisting of four separate quadrant stages produced through the rotation of a pair of disks 30 (only one of which is shown at the right of Figure 3) carried by shafts rotatably mounted in sleeves 31 extending from both surfaces of the table T similar to the sleeve 19, the shafts having pinion driving connections 32 with the drive shaft 22. The feed rack 27 is pivotally connected to the disks 30 eccentrically of the axis of the disks by arms 33 extended laterally of said rack plate adjacent opposite ends. By the rotation of the disks movement is imparted to the rack laterally to engage the rack fingers between and into engagement with the caps on the rails 24, then in a direction longitudinally of said rails to feed caps along the rails, then laterally to move the rack fingers out of en-

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engagement with the caps, and then longitudinally in reverse direction to position the rack fingers between successive caps on the rails 24.

The caps, as they are moved by the disk 18 from the guide 17, are engaged between guide ledges 34 extended downward from the opposite longitudinal marginal portions of a plate 34' hingedly carried by the guide member 17, as at 35, in alignment with the delivery end thereof to extend over the disk at the entrance to the space between the cap supporting rails 24^{and} to permit lifting of said guide plate away from the disk 18 to remove caps which may become jammed therein, or for inspection, cleaning or otherwise. The one guide ledge 34 is cut away at the entrance to the cap supporting rails for the delivery of the caps laterally from the disk 18 to said rails.

The movement of the caps through the rotation of the disk 18 along the guide ledges 34 is arrested by a stop 36 in the form of a finger extended from the end of one of the rails 24 at a right angle to the guide plate 34' to the end of the outer guide ledge 34. The cap abutting the extended rail portion 36 is moved forward onto the bevelled edges 26 of the rails 24 by an ejector member 37 pivotally mounted at one end on a supporting stud 38 on the table T, to extend over disk 18 and have oscillatory movement between said disk and guide ledges 34 and the extended rail portion 36 to engage the cap by a projection extended laterally from the free end, the free end of said ejector being in an arc, as at 39, to engage the successive cap and maintain the caps in their respective positions in the guide and chute during the delivery of the forward cap onto the rails 24. The ejector 37 is actuated by and in sequence with the movements of the feed rack through a link 40 pivotally connected at one end with the feed rack 27 and connected to the ejector member adjacent the mounting thereof by pin 42 fixed in and extending laterally from the

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ejector engaging a slot 41 in the link, the ejector being urged in a direction toward the guide 34' under the tension of a leaf spring 43 anchored on the ejector support and slidably engaging the pin 42 to assure the positive actuation of the ejector and to afford loose motion for the variations in the movements of the parts.

The longitudinal movement of the feed rack in a direction away from the disk 18 and the corresponding forward movement of the ejector 37 effected by the spring 43 will transfer the cap abutting the stop 36 onto the rails 24 into engagement with the end feeding finger of the rack slide 27, as shown in Figure 3. During the next two quadrant steps of the movement of the rack slide, the ejector 37 will be moved away from the guide 34' through the link connection thereof with the rack slide permitting the successive caps in the guide 17 to move by the force of the ^{weight} ~~mass~~ of the caps down the chute 14 and the rotation of the disk 18 positioning the foremost cap against the stop 36 opposite the ejector projection, the recess between the two fingers 29 at the end of the rack being positioned opposite the cap positioned by the ejector on the rails 24 and upon the successive movement of the feed rack towards the caps on the rails 24 positioning the end feed finger in the rear of such end cap on the cap supporting rail 24 and moving the rack fingers that were in front of caps to the rear of the respective caps on the rails 24. During the next step in the movement of the feed rack the caps on the rails are moved forward a distance equal to the width of the rack recesses, the cap in the forward recess being delivered from the rails and the foremost cap in the guide 34' transferred to the rails 24 by the ejector 37 in conjunction with the first slide projection as described.

To retain the caps on the rails 24 guide rails 44 are secured upon the tops of the rails 24 with the longitudinal

marginal portion overhanging the beveled cap supporting edges of the rails, as shown in Figure 7.

he a
 To heat the pads P of the caps to render viscous an adhesive normally non-viscous ^{such as caoutchouc,} carried there by said pads of the linings to be positioned on the pads, the caps are passed through a zone having an elevated temperature as they are moved along the rails 34 and produced by an electric heating unit 45 comprising an electric resistance wire embedded in a carrier having low electric conductivity and high thermal conductivity material arranged with ⁱⁿ a receptacle 46 pivotally mounted by arms 47 on one of the rails 34 to adjustably position the unit in superposed relation to the space between the rails and the exposed pads, as shown in full lines in Figure 4, and in a position remotely of the caps on the rails, as shown in dot and dash lines in said Figure 4. The terminals of the resistance wire are electrically connected to contact terminals of a connection plug member mounted on the receptacle, as at 46', for connection with a source of electricity by electric conductors 48 through the usual plug connection.

To prevent scorching of the pads of the caps ~~exposed~~ below the heating unit due to the rendering of the apparatus inactive through the disconnecting of the apparatus from the source of power, in the present instance effected by shifting a belt ~~transmission~~ (not shown) from a pulley 52 fixed to the drive shaft to a pulley 53 loose on said shaft, said belt shifter comprising a rod 49 slidably mounted in brackets 50 on standards 3 and carrying a yoke member 51 for the passage and embracing the opposite edges of the belt. The belt shifter is actuated by a lever 54 pivotally mounted intermediate the ends thereof on the side of the table 7, as at 55, and is offset as shown in Figure 2, to allow for the variation in the relative positions of the belt shifter bar 49 and the

side of the table T for pivotal connection of the lower end of the lever with the shifter bar, as at 56, the opposite end of the lever being arranged with a hand grip 57 for the manipulation of the lever. The manipulation of the lever 54 actuates the heating unit to different positions relative to the rails 24 through a bell crank 58 pivotally mounted on top of the table T having one end thereof extended into the path of movement of and arranged to be engaged by the lever 54, and at the opposite end pivotally connected, as at 59, to one end of a link 60 having the opposite end 61 bent at a right angle and pivotally connected to an extended right angular portion 62 of one of the heating unit supporting arms 47. By the moving of the lever 54 to shift the belt to the pulley 52 the link 60 will assume the position shown in full lines in Figures 3 and 4, by the moving of the heating unit toward the caps on the rails 24 caused by the weight ^{and} the eccentric mounting of the heating unit relative to the extended portion 62. By actuating the lever 54 to shift the belt onto the loose pulley 53 the lever 54 will engage and move the bell crank 58 to the position shown in Figure 2, and through the link 60 the heating unit will be actuated away from the caps on the rails 24, as shown in dot and dash lines in Figure 4.

For the positioning and securing of impervious linings to the heated cap pads the caps are intermittently delivered by the reciprocation of the feed rack 27 to punch and die mechanism carried by a slide 63 mounted to have vertical sliding movement in a standard 64 fixed to the top of the table T, and said slide pivotally connected to a crank arm 65 connected with a strap 66 loosely encircling an eccentric 67 (Figure 6) fixed on the drive shaft 22 to impart reciprocatory movement to the slide. The slide is arranged with a laterally extending arm 68 fixedly carrying a punch 69

having an enlargement 70 at the end, ~~and the punch~~ as shown in Figures 10 to 15. The punch is extended through a perforation in the slide arm 68 and adjustably secured by a perforated plate 71 fixed in superposed relation to the arm 68 by studs 72 threaded in the arm and secured in aligned perforations in the plate by nuts 73 threaded onto the studs and abutting both surfaces of the plate, the up-threaded end of the punch being engaged in the perforation of the plate with an annular enlargement 74 on the punch abutting the under surface of the plate and secured to the plate by a nut 75 clamping the plate to the punch enlargement 74. The punch extends below the slide arm 68 in alignment with the space between the cap supporting rails 24 and a support in the form of a post 102 for a cap positioned relative to said support on the rails 24 by the feed rack 27 and co-operating with a die to sever linings from a web W. The web comprises a material which is not only impervious to moisture but also to the deteriorating action of the contents of a receptacle to which the closure cap is applied, usually comprising tin foil, having one face arranged with an adhesive coating, such as rubber, which is non-viscous under normal temperature and is adapted to be rendered viscous by an elevated temperature. The die comprises a tubular member ⁷⁶ having an enlargement 77 at one end with a transverse recess therein of rectangular shape in cross section and of greater width than the diameter of the bore through the tubular portion 76 to serve as a guide and support for the web, the shoulder formed by said enlargement ^{ment} constituting the cutter edge of the die with which the punch co-operates to sever lining disks from the web, as shown at 78. The die is carried and slidably mounted on the punch to participate in the movement of the punch so that the punch and die

may have movement relative to each other by a sleeve member 76' engaged upon the punch and extending through the perforation in the slide arm 68 through which the punch extends, said tubular member having an enlargement 77' with a transverse recess similar to the die 76 and arranged in opposed relation to said enlarged portion of the die, as shown in Figures 10 to 15. The tubular die portion slidably engages in a perforation of a support and guide 79 for the web W extending transversely of the table and through an opening 80 in the slide support 64 and an opening 80' in the slide 65, (Figure 11,) and supported upon the bottom wall of the opening 80 and one of the supports 25 for a cap supporting rail 24, said guide and support 79 being arranged above and in contiguous relation to the cap supporting rails 24. The die has a predetermined movement through a perforation 79' in the guide 79 limited by the enlargement 77 of the die engaging the guide 79, to engage the tubular portion 76 with a pad P in a cap C fed along the rails 24 and positioned relative to the support 102 (Figures 13 and 14) to serve as a guide for a lining disk severed from the web by the punch and positioned by the punch to the cap pad on the support 102. The carrier sleeve 76' slidably engages a perforation in an inwardly extending annular flange 82 of a tubular member 81 superposed to the web support 79, said tubular member or housing 81 having oppositely disposed guide openings 81' in line with the guide recesses in the enlarged portions 77, 77' of the die 76 and its carrier 76'. The die 76 is normally urged to position with the tubular portion/out of the path of travel of the caps upon the rails 24 by a spring 83 coiled about the sleeve 76' and confined between the flange 82 and nuts 84 threaded onto the sleeve 76'. The web is delivered from a roll R of such web to the punch and die mechanism with the adhesive surface lowermost, and in the

operation of punching linings therefrom the punch is actuated to sever a lining disk from the web, the punch assuming substantially the position shown in Figure 12, the lining disk severed from the web being guided through the tubular portion of the die by the punch.

54 During this operation of the punch the die is retained in its uppermost position by the spring 83, and as the punch assumes the position shown in Figure 12 the slide arm 68 engages with the nuts 84 on the die carrier thereby imparting simultaneous movement to the punch and die and moving the tubular portion of the die 76 into engagement with the pad in the closure cap and the punch positioning the severed lining disk against the heated pin for adhesion thereto, as shown in Figure 13.

To effect adhesion of the severed lining to the sealing pad of the cap by the heat from the pad, pressure is applied to the severed lining before the cap is moved by the feed rack 27 away from the punch and die mechanism. This pressure is applied by a plunger 85 slidably mounted in the punch with the lower end arranged with a head 86 slidable in the enlargement 70 in the punch, the upward movement of the plunger being limited by the shoulder formed at the juncture of said head and plunger abutting the shoulder formed at the enlargement of the punch bore. The head 86 is normally positioned within the punched head 70, as shown in Figure 10, 12 and 13 by a spring 87 coiled about the plunger and confined between the punch nut 75 and a head 88 fixed to the end of the plunger. During the positioning of the severed lining in the cap by the punch and die, the plunger is actuated to impinge the lining against the cap pad, as shown in Figure 14, by a vertical reciprocatory kicker in the form of a plunger 89 slidably mounted in sleeve portions 90 and 92 extending parallelly from a standard 91 (Figures 10, 12 and 13) mounted on the table T at the side of the cap supporting rails 24. The kicker extends through per

foration in the table and has a bifurcated head 93 fixed to the end rotatably carrying a roller 94 between the bifurcation legs to follow a cam 95 fixed to the drive shaft 22 to impart movement to the kicker in an upward direction just prior to the return movement of the slide 63, as shown in Figure 14. The kicker 89 is urged in a downward direction to cause the roller to follow the cam 95 by a spring 96 coiled about the kicker plunger 89 and confined between the sleeve 90 and a collar 97 fastened to the kicker above the sleeve 92. The kicker plunger 89 actuates the plunger 85 to impinge the head 86 of said plunger against the lining, as shown in Figures 14 and 15, through the engagement of a lever 98 pivotally mounted intermediate the ends thereof between the bifurcation legs of a head 99 fixed to the end of a post 100 fixed in and extending upward from the slide 63 and positioned between the punch mechanism and kicker plunger 89, one end of the lever engaging between the bifurcation legs of and pivotally connected to the head 88 of plunger 85, and the opposite end extending over an adjustable abutment 101, in the form of a set screw threaded in the end of the kicker plunger 89, the lever engaging said abutment at the end of the downward movement of the slide 63 of the punch and die engaging the pad in the cap, as shown in Figure 15. In said position the kicker is moved upward by the cam 95 engaging the abutment 101 with and rocking the lever 98 and moving the plunger 85 against the tension of spring 87 and impinging the plunger head 86 under pressure against the lining in a cap, as shown in Figure 14, and maintaining the plunger 85 in such position during the receding movement of the punch and die, as shown in Figure 15, the plunger head 86 also serving to strip the lining from the punch and die. The plunger head 86 recedes to its normal position at the commencement of the advancement of the caps on the rails 24

by the movement of the feed rack 27 in the direction toward the punch and die mechanism by the change of position of the roller 94 relative to the cam 95 effected by the rotation of the cam and the return of the kicker plunger 89 under the influence of the spring 96 and of the plunger 85 by the force of the spring 87.

The web W of lining material is fed to the punch and die mechanism along the support and guide 79 from a roll R of such web carried on a reel 105 rotatably supported by an arm 104 of a bracket 106 fixed to and extending from the table T. The web is fed from the web roll to the web support and guide 79 of the punch and die mechanism below a roller 108 rotatably supported between parallel side guide flanges 107 of said guide which terminate at the die housing 81 and continues at the opposite side of said housing. The web is delivered from below the roller 108 to the punch and die mechanism through the guide slots 81' of the die housing and enlargements 77, 77' of the die 76 and its carrier 76'.

The web is intermittently fed or drawn across the support and guide 79 relative to the punch and die mechanism by a pair of superposed rollers 108 and 109 fixed to rotatable shafts 110 and 111 and positively driven one from the other by meshing gears 112 and 113 fixed on the end of each of the shafts 110 and 111. The roller 109 is mounted between the legs of a U-shaped standard 114 fixed to and projecting up from the table T with the legs arranged with bifurcations 115 terminating above the mounting of the roller 109 and having ribs 116 extending from the opposed faces for the slidable engagement of grooves or slideways 117 arranged adjacent the marginal edges of a block 118 having a bifurcation 119 at the lower end with the bifurcation legs perforated for the mounting of the shaft of roller 108, the upper end of the block being weighted and flared out-

wardly to form an hand grip for the manipulating of the block to move the roller 108 out of and into engagement with the roller 109. The weight of the block maintains the gear 112 in mesh with gear 113 and the roller carried thereby in contact with roller 109. The rollers 108, 109 are rotated intermittently and during the period of rest of the punch and die mechanism and simultaneously with the feeding of the caps on the supporting rails 24, by a gear 120 fixed on a shaft 121 rotatable in lateral extensions 122 of the standard 114 and held against movement by a split collar 123 embracing and frictionally engaging the periphery of a disk 123' (Figure 8) with a predetermined force by a screw to draw the collar sections to the disk, and thus preventing overthrow and backlash of the feeding rollers. The collar is anchored on the standard 114 by a pin, as shown in Figures 2 and 8. The gear 120 meshes with the roller gear 113 and is intermittently rotated by the rotation of a ratchet wheel 124 fixed on the shaft 121 and intermittently rotated by a pawl 126 pivotally carried by a rocker, in the form of a plate 125 loosely mounted on the shaft 121 between the gear 120 and ratchet wheel 124, the pawl 126 being urged into engagement with the ratchet wheel by a spring 127. The rocker plate is rocked or reciprocated by a link 128 pivotally connected to an extension of the plate and to one end of a lever 129 pivotally mounted intermediate the ends thereof in a bifurcated bracket 130 fixed to and extending from the table T. The opposite end of the lever is arranged with an elongated slot 131 for the adjustable engagement of a belt carried at one end of a rod 132, the opposite end of the rod being connected to a strap 133 loosely embracing an eccentric 134 fixed to the drive shaft 22, whereby reciprocatory movement is imparted to the rod 132 and through the lever and link connection thereof with the rocker ^{plate} ~~125~~ ~~125~~ actuating ~~the~~ the rocker and

as it is moved in one direction engaging the pawl and ratchet wheel and rotating said wheel and gear 120 a predetermined distance, which distance may be varied by the adjustment of the pin and slot connection 131 between the rod 132 and lever 129, the distance being determined by the length of the web desired to be fed measured by the diameter of the disk.

To prevent the breaking of the web due to the pull thereon by the feeding rollers 108, 109 from the reel 103, tensioning and supplementary feeding means are provided to feed the web from the web reel 103 to the punch and die mechanism, with a slack portion of the web *W* interposed between the web roll and the punch and die mechanism, said means comprising a flanged roller 135 rotatably mounted on an extension 136 of the bracket 105 extending at substantially a right angle to the reel carrier extension 104, about which roller the web is led from the web roll and guided to a flanged feed roller 137 fixed to one end of a shaft 138 rotatably supported by bracket 105 at the juncture of the extensions 104 and 136, the shaft 138 extending to the opposite side of the bracket 105 through a boss thereon and has a sprocket wheel 139 fixed thereto for operatively connecting and driving the roller 137 from the driving means for the feed rollers 108, 109, to intermittently rotate said roller 137 synchronously ^{with} the rollers 108, 109. This connection comprises a sprocket chain 140 engaging the sprocket wheel 139 and a sprocket wheel 141 fixed to a shaft 142 rotatably mounted in a bracket 143 supported on the table *T* adjacent to the standard 114, and operatively connected with the drive gear 120 by a gear 144 on shaft 142 meshing with a gear 145 rotatably supported by the bracket 143 and meshing with the roller gear 115, as shown in Figures 19 and 20. The web is maintained in contact with the roller 137 by the weight of a idler roller 146 rotatably carried to engage the web between the

30 flanges of roller 137 adjacent one end of a lever 147 pivotally mounted at the opposite end on the bracket 105 and arranged to yieldingly urge the roller 146 into engagement with the web on roller 137 by a spring 148 coiled about the mounting of the lever with one end fixed to the arm 105 by bending the said end to engage under a flange of said arm and the opposite end of the spring bent laterally and engaged over the upper edge of the lever, as shown in Figure 19. From the roller 137 the web is led to the guide and support 79 under the roller 106 with the slack portion interposed, the roller 106 being arranged relative to the feeding rollers 108, 109 so that the web will extend in a substantially horizontal plane during the severing of a lining therefrom to assure an even severing of the lining.

To prevent the feeding of the web relative to the punch and die mechanism with a consequent waste thereof with no cap positioned on the supporting rails 24 in register with the punch and die mechanism, means are provided to hold the pawl out of engagement with the ratchet wheel upon the actuation of the pawl carrying rocker 125 and thereby prevent the rotation of the gears 120, 113 and 112, said means comprising a lever or bar 149 pivotally mounted intermediate the ends on the standard 114, one end of the lever extending over the cap rails 24 and being weighted, as at 150, to urge said end of the lever in a downward direction, and having a member 151 fixed thereto to extend in superposed relation to the cap engaging space between the rails 24 and having a finger extended into an indent 152 in the edge of the web guide 79 to be engaged by the flange of the caps to lift the weighted lever end 150 thereby rocking the lever to depress the opposite end, which is of curved formation, as at 153 in Figure 6, and engages below a pin 154 extending laterally from the pawl 126, this movement of the lever per-

mitting the pawl to engage the ratchet wheel and actuation thereof by the rocking of the pawl carrying rocker 125 and the actuation of the feed rollers 108, 109 through the gears 120, 113 and 112. When there is no cap on the rails 24 below the finger of member 151 the member 151 will move by the weight of the end 150 downward between the rails 24, it being limited in this movement by an adjustable abutment in the form of a set screw 155 threaded into a vertical perforation in the end 150 to abut one of the guide edges 44, and this downward movement of the lever end 150 will move lever end 153 upward and through the engagement of said end with the pawl pin 154 move the pawl 126 out of engagement with the ratchet wheel 124, thereby stopping the rotation of the rollers 108, 109 through the breaking of the connection between the pawl carrying rocker 125 and gear 120.

To prevent the accumulation of the adhesive of the web on roller 109, which may^{be} rendered somewhat viscous on the remaining portion of the web from which linings have been severed, due to heat created by the operation of the punch and die mechanism, a scraper in the form of a curved plate 156 is carried by angle brackets fixed to the standard extensions 122, one edge of said plate being arranged in scraping relation to the roller 109 and the other end extending to a lower plane for the disposal of the accumulation of the adhesive thereon by gravity.

To facilitate the threading of the web to the web feeding means a hand knob 110' is fixed to the extended end of the roller carrying shaft 110, and whereby web feeding movement may be imparted to the feed rollers 108, 109.

To assure an intimate adhesion of the severed linings positioned on the pads P the caps are advanced from the punch and die mechanism by the reciprocal^{-tion} of the feed rack 27 to means to successively subject the linings assembled on the

pads in caps to heat and pressure. This means comprises a pair of heated plungers slidably mounted in the arm 68 of the slide 63 in parallel relation to the punch and die and moved by the movement of the slide into and out of engagement with caps on the supporting rails 24 positioned in alignment with said plungers. Each of the plungers comprises a tubular shank 157 slidably mounted in a bore in the slide arm 68, the end of the shank extending above the member 68 having an annular enlargement 158 to abut the member 68 to limit the downward movement of the shank. The lower end of the shank carries a head in the form of a plug 159 of heat conducting material and of a diameter equal to the diameter of the lining, said head being threaded into the bore of the shank and carrying an electric heat/^{-ing}unit to heat the same, comprising a carrier 160 of electric insulating and heat conducting material having embedded therein an electric resistance wire 161 connected to a source of electricity by conductors 162 supported by a terminal plug 163 of insulating material inserted in the bore of the shank at the upper end with an annular enlargement thereof abutting the end of the shank and enclosed in a cap member 164 threaded onto the end of the shank extending beyond the enlargement 158, the cap having an opening therethrough for the passage of the conductors leading from a recess 165 to accommodate the plug 163 and the electrical connections of the conductors therewith. The head 159 is maintained with a yielding pressure against a lining positioned in a cap during the downward movement of the slide 63 by a spring 167 coiled about the shank and confined between a collar 166 fixed on the lower end of the shank and the slide arm 68, the collar 166 also limiting the movement of the head 159 toward the cap on the rails 24 by engaging with the rails 44 to retain the caps on the support/^{-ing}rails 24. By this arrangement sufficient force is applied to the

lining without forcing the cap through the bevelled edges 26 of the rails 24 and assure an intimate adhesion of the linings to the pads. Both of the plungers are of similar structure and operate simultaneously upon different caps during the period of rest of the caps on the rails 24.

To maintain an intimate adhesion of the linings to the pads the caps are advanced from the heating plungers to means to place them under pressure as they cool. This means comprises a disk 168 fixed on a shaft 169 rotatably supported at one end in a bearing sleeve 170 fixed to the table T and in a hub portion of a bracket 171 mounted on the table T to extend upward and overhang the disk 168. The shaft 169 is rotated ^{through} ~~from~~ a gear 172 fixed to the shaft ^{and} meshing with a pinion 173 fixed to one end of a shaft 173' rotatably supported in a bearing sleeve 174 fixed to and extending below the table T, a bevel gear 175 on the lower end of the shaft meshing with a bevel pinion 176 fixed to the drive shaft 22. The upper surface of the table is in a plane with the cap supporting rails 24, and the caps are delivered from said rails to the table by the feed rack 27. To place the linings assembled on pads in caps on the table under pressure to maintain an intimate adhesion of the linings when the caps are cooled a series of plungers 177 are circumferentially spaced around the table, said plungers being slidably carried by a pair of superposed ring members 178, 179 fixed in spaced relation on the shaft 169 superposed to the table 168. The plungers are urged into engagement with the table by springs 182 coiled about the plungers with one end fixed to the plungers and the opposite end abutting against the upper ring member 178. The ratio of the gearing 172 to 176 is such so as to rotate the table a distance equal to the spacing of the plungers 177 upon each cap feeding movement of the feed rack 27 and thus deliver caps from the supporting rails 24

to the successive plungers 177.

To release the plungers from the caps on the table and permit the positioning of caps on the table 168 in interposed relation to the plungers, each plunger carries a roller on a stud fixed in the plunger above the ring member 178 to extend laterally of the periphery of said ring member 178, as shown at 181, which rollers ride up an arcuate cam member 180 supported upon the table T by the rotation of the plungers with the table 168, thus moving the plungers successively away from the table against the tension of the springs 182 and maintaining them in such position until they pass the delivery end of the rails 24 and a cap has been delivered onto the table and positioned relative to a plunger when the plunger rollers ride off from the cam member and the plunger engages a cap on the table positioned relative thereto. As the plunger rollers 181 ride up the cam 180 and the plungers are moved out of engagement with caps on the table such caps by the rotation of the table engage an abutment (not shown) intersecting the path of travel of the caps and arranged to direct the caps from the table to a chute 183.

It will be obvious that various modifications may be made in the construction and arrangement of parts without departing from the scope of the invention, and that portions of the invention may be used without others and come within the scope of the invention.

Having thus described my invention, I claim:

1. In apparatus for assembling and securing impervious linings in closure caps, punch and die mechanism, means to intermittently feed and position caps relative to the punch and die mechanism and pass the caps through a zone having an elevated temperature to heat the same, and means to feed a web of impervious material having an adhesive surface normally non-viscous to the punch and die mechanism to be severed into linings and positioned by the punch and die mechanism ^{in the caps} to effect an adhesion between the linings and the caps.

2. In apparatus for assembling and securing impervious linings to sealing pads in closure caps, punch and die mechanism, means to intermittently feed and position caps with sealing pads assembled thereon relative to the punch and die mechanism, means for producing an elevated temperature through which the caps pass as they are fed to the punch and die mechanism, ^{to heat the pads in the caps} and means to feed a web of impervious material having an adhesive surface normally non-viscous to the punch and die mechanism to be severed into linings and positioned by the punch ^{in the caps with the adhesive surface applied to the pads} to effect an adhesion between the linings and the heated sealing pads of the caps ^{a fusion of the adhesive and}

3. In apparatus for assembling and securing impervious linings to pads in closure caps, punch and die mechanism, ^{having a diameter less than the pads} means to intermittently feed and position caps to the punch and die mechanism and pass the caps through a zone having an elevated temperature, means to feed a web of impervious material having an adhesive surface normally non-viscous to the punch and die mechanism ^{having disks of less diameter than the pads} to be severed into linings and positioned by the punch in the caps, and means to guide and position the linings centrally of the caps ^{heads}

4. In apparatus for assembling and securing impervious

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ous linings to pads in closure caps, punch and die mechanism, a cap support, means to intermittently feed and position caps on the support relative to the punch and die mechanism and to pass the caps through a zone having an elevated temperature, means to feed a web of impervious material having an adhesive surface normally non-viscous from a roll of such web to the punch and die mechanism to be severed into linings and positioned by the punch and die mechanism in the caps to effect an adhesion between the linings and the pads, and said feeding means normally inoperative to feed the web and adapted to be rendered operative by a cap on the support to be positioned relative to the punch and die mechanism upon the successive actuation of the cap feeding means.

3. In apparatus for assembling and securing impervious linings in closure caps, punch and die mechanism, means to intermittently feed and position ^{caps} relative to the punch and die mechanism and pass the caps through a zone having an elevated temperature to heat the same as they are fed to the punch and die mechanism, means to feed a web of impervious material having an adhesive surface normally non-viscous to the punch and die mechanism to be severed into linings and positioned by the punch and die mechanism in the caps, and the adhesive surface thereof rendered viscous by the heated cap, and means to which the caps with the impervious linings are assembled therein are delivered from the punch and die mechanism to place the linings under heat and pressure to effect intimate adhesion between the linings and the caps.

4. Apparatus for assembling and securing impervious linings in closure caps as claimed in claim 3, wherein the die is arranged to guide and the punch to position the linings severed from the web centrally of the caps.

5. In apparatus for assembling and securing impervi-

ous linings in closure caps, reciprocatory punch and die mechanism, means to intermittently feed and position caps to the punch and die mechanism, means to feed a web of the lining material having an adhesive surface normally non-viscous to the punch and die mechanism to be severed into linings and positioned by the punch and die mechanism in the caps, means to which the caps with the linings are delivered from the punch and die mechanism to place the linings under heat and pressure to effect an intimate adhesion of the linings, ^{in the caps} and means to which the caps are delivered from said latter means to place the same under pressure to maintain adhesion between the linings and caps during the cooling period.

6. In apparatus for assembling and securing linings in closure caps, reciprocatory punch and die mechanism, means to intermittently feed and position caps to the punch and die mechanism, and pass the caps through a zone having an elevated temperature to heat the same, means to feed a web of lining material having an adhesive surface normally non-viscous to the punch and die mechanism to be severed into linings, the lining severed from the web being positioned by the punch in a cap, and the die being arranged to engage in the cap and guide the lining as it is positioned by the punch in the cap, means to which the caps with the linings are delivered from the punch and die mechanism to place the linings in the caps under heat and pressure to effect an intimate adhesion thereof, and means to which the caps are delivered from said latter means to place the same under pressure during the cooling to effect and maintain adhesion between the linings and the caps.

7. In apparatus for assembling and securing linings in closure caps, punch and die mechanism, means to intermittently feed and position the caps to the punch and die mechanism, heating means operatively positioned juxtaposedly of

the cap feeding and positioning means to heat the caps as they are fed to the punch and die mechanism, and means to feed a web of lining material having an adhesive on one surface to the punch and die mechanism to be severed into linings and positioned by the punch and die mechanism in the heated caps rendering the adhesive surface of the lining viscous and effecting an adhesion between the linings and the caps.

710. In apparatus for assembling and securing linings in closure caps, punch and die mechanism, means to intermittently feed and position the caps to the punch and die mechanism, heating means to produce a zone having an elevated temperature to heat the caps as they are fed to the punch and die mechanism, said heating means being adjustably supported superposed to the path of travel of the caps, means to feed a web of lining material having an adhesive surface to the punch and die mechanism to be severed into linings and positioned by the punch and die mechanism in the caps to effect an adhesion of the linings to the caps, and means to render the apparatus operative and inoperative, and adapted when actuated to render the apparatus operative to position the heating means superposed to the travel of the caps and move the heating means to a position remote to the travel of the caps when said means is actuated to render the apparatus inoperative.

811. In apparatus for assembling and securing linings to pads in closure caps, punch and die mechanism, a support for a series of caps below and intersecting the axis of the punch and die mechanism, means to intermittently feed and position caps on said support ^{relative} to the punch and die mechanism, and pass the caps through a zone having an elevated temperature ^{as they are fed to the punch and die mechanism} to heat the pads, means to feed a web of lining material having an adhesive surface normally non-viscous to the punch



and die mechanism to be severed into linings and positioned in the caps centrally of the pads by the punch and die mechanism, and means operative synchronously with the actuation of the punch and die mechanism to which the caps with linings are delivered from the punch and die mechanism to place the linings under heat and pressure to render the same viscous and effect an adhesion between the linings and the pads.

9 12. In apparatus for assembling and securing linings to pads in closure caps, punch and die mechanism, a support for a series of caps arranged below and intersecting the axis of the punch and die mechanism, means to intermittently feed and position caps on said supporting means ^{relative} to the punch and die mechanism, and pass the caps through a zone having an elevated temperature to heat the pads, means ^{intermittently operative to successively} to deliver the caps relative to said feeding and positioning means, and means to feed a web of lining material having an adhesive surface normally non-viscous to the punch and die mechanism to be severed into linings and positioned in the caps centrally of the pads by the punch and die mechanism to effect an ^{infusion of the adhesive and} adhesion between the linings and the pads.

10 16. In apparatus for assembling and securing linings to pads in closure caps, punch and die mechanism, a support for a series of caps, means to intermittently feed and position caps on said support ^{relative} to the punch and die mechanism and pass the caps through a zone having an elevated temperature to heat the pads, means operative in sequence with the actuation of the cap feeding and positioning means to deliver the caps to the support relative to said feeding and positioning means, and means to feed a web of lining material having an adhesive surface normally non-viscous to the punch and die mechanism to be severed into linings and positioned in the caps centrally of the pads by the punch and die mechanism to effect an ^{infusion of the adhesive and} adhesion between the linings and the pads.

11 18. In apparatus for assembling and securing linings

to pads in closure caps, punch and die mechanism, means to support caps in alinement with the punch and die mechanism, means to intermittently feed and position caps on said supporting means to the punch and die mechanism, means to supply the caps to the supporting means relative to said feeding and positioning means, an electric heating unit intermediate the punch and die mechanism and the cap supplying means *and superposed to the travel of the caps* means for producing an elevated temperature to heat the pads in the caps, and means to feed a web of lining material having an adhesive surface normally non-viscous to the punch and die mechanism to be severed into linings and positioned in the caps centrally of the pads by the punch and die mechanism to effect an adhesion between the linings and the pads.

1216. In apparatus for assembling and securing linings to pads in closure caps, punch and die mechanism, means to support caps in alinement with the punch and die mechanism, means to intermittently feed and position caps on said supporting means to the punch and die mechanism and pass the caps through a zone having an elevated temperature to heat the pads, means to supply caps to the supporting means relative to said feeding and positioning means comprising a rotatable disk to support and align caps thereon with the supporting means, and a finger reciprocated by the actuation of the cap feeding and positioning means to deliver caps from the disk to the supporting means relative to the feeding and positioning means, and means to feed a web of lining material having an adhesive surface normally non-viscous to the punch and die mechanism to be severed into linings and positioned in the caps relative to the pads by the punch and die mechanism to effect an adhesion between the linings and the pads.

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1316. In apparatus for assembling and securing linings to pads in closure caps, punch and die mechanism, a support for a series of caps intersecting the axis of the punch and die mechanism, means to intermittently feed and position caps on said support to the punch and die mechanism, an adjustable electric heating unit to be positioned to extend in superposed relation to the pads in the travel of the caps on the support as they are fed to the punch and die mechanism to heat the pads and be adjusted to a position remote to the caps on the support, ^{and} means to feed a web of lining material having an adhesive surface normally non-viscous from a roll of such material to the punch and die mechanism to be severed into linings and positioned in the caps centrally of the heated pads by the punch and die mechanism to effect an adhesion between the linings and the pads.

1317. In apparatus for assembling linings in closure caps, punch and die mechanism, means to support a cap relative to the punch and die mechanism, means to feed a web of lining material to the punch and die mechanism to be severed into linings and positioned centrally in the caps by the punch and die mechanism, a support and guide for the web interposed between the punch and die mechanism and cap supporting means to one end of which the web is delivered from a web roll with a slack portion between the web roll and support and guide, and intermittently operative means arranged at the opposite end of said support and guide to draw the web across the support and guide relative to the punch and die mechanism. *in the inoperative position thereof*

See a

1318. In apparatus for assembling linings in closure caps, punch and die mechanism, means to support a cap relative to the punch and die mechanism, means to feed a web of lining material from a roll of such web to the punch and die

mechanism to be severed into linings and the linings positioned in the caps by the punch and die mechanism comprising a support and guide for the web to the punch and die mechanism, intermittently operative means arranged at one end of the support and guide to draw the web across the same, and intermittently operative means to deliver the web from the web roll to the opposite end of the support and guide with a slack portion of the web interposed between said latter means and the support and guide. ^{the web drawing and delivering means being actuated in synchronism with each other}

per B
per B = 16 ~~24~~ 15. Apparatus for assembling linings in closure caps as claimed in claim ¹⁵ 13, wherein the intermittently operative means to draw the web across the support and guide comprises a pair of rollers between which the web is engaged, a ratchet wheel operatively connected with said rollers, a rocker pivotally supported on the axis of the ratchet wheel, a pawl pivotally carried by said rocker to engage the ratchet wheel, and means to oscillate the rocker.

per B = 17 ~~25~~ 20. Apparatus for assembling linings in closure caps as claimed in claim ¹⁵ 13, wherein the means to deliver the web from the web roll to the support and guide comprises an intermittently rotated roller, and rollers to guide the web from the web roll to and maintain it in contact with said intermittently rotated roller.

18 ~~26~~ 21. In apparatus for assembling linings in closure caps, punch and die mechanism, means to support a cap relative to the punch and die mechanism, means to feed a web of lining material from a roll of such web to the punch and die mechanism to be severed into linings and the linings positioned in the caps by the punch and die mechanism comprising a support and guide for the web to the punch and die mechanism, a pair of rollers arranged at one end of the support and guide between which the web is engaged and operative to draw the web across the support and guide, a ratchet wheel operat-

ively connected with said rollers, a rocker carrying a pawl to co-operate with the ratchet wheel to effect intermittent rotation thereof and intermittent feeding movements of the rollers, a roller arranged at the opposite end of the support and guide to deliver the web from the web roll, said roller being operatively connected with and intermittently rotated from the ratchet wheel, and rollers to guide the web from the web roll and maintain the web in contact with the latter feed roller.

1940²². In apparatus for assembling and securing linings to pads in closure caps, punch and die mechanism, a cap support, means to feed and position caps on the support relative to the punch and die mechanism, means to feed a web of lining material having an adhesive surface normally non-viscous to the punch and die mechanism to be severed into linings and positioned in the caps centrally of and with the adhesive surface abutting the pads by the punch and die mechanism, and electrically heated plungers to which the caps are successively delivered from the punch and die mechanism to place the linings under heat and pressure and effect an intimate adhesion between the linings and the pads.

2074²⁵. In apparatus for assembling and securing linings to pads in closure caps, punch and die mechanism, a cap support, means to feed and position caps on the support relative to the punch and die mechanism, means to feed a web of lining material having an adhesive surface normally non-viscous to the punch and die mechanism to be severed into linings and positioned in the caps centrally of and with the adhesive surface abutting the pads by the punch and die mechanism, electrically heated plungers to which the caps are successively delivered from the punch and die mechanism to place the linings under heat and pressure and effect an intimate adhesion between the linings and the pads, and means to which the caps with the linings are delivered from the heated plungers to place the

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pads and linings under pressure during the cooling thereof.

22. In apparatus for assembling linings in closure caps, a cap support, punch and die mechanism superposed to the cap support to sever linings from a web of lining material having an adhesive surface and position the severed linings in a cap on the cap support comprising a reciprocatory punch and a tubular die slidable on and reciprocatory with the punch and one movable relative to the other, said die being arranged to engage within the cap on the support and guide a severed lining as it is positioned by the punch in the cap.

hub 22. In apparatus for assembling linings in closure caps as claimed in claim 21, means to engage and hold the lining to the cap and strip the lining from the punch and die as they recede from the cap.

hub 23. In apparatus for assembling linings in closure caps as claimed in claim 21, wherein the punch is tubular, a plunger slidable in the punch operative to engage and hold the lining to the cap and strip the lining from the punch and die as they recede from the cap.

24. In apparatus for assembling linings in closure caps, a cap support, means to sever a lining from a web and position the same in a cap on the support, comprising a die arranged with a support for the web from which the linings are severed, said die being slidably supported in superposed relation to the cap support and having a tubular portion opposed to the cap support to engage within the cap, said die being normally urged in a direction from the cap support, a punch slidable in the die to sever the lining from the web, and means to actuate said punch and die to engage the tubular portion of the die within the cap, sever the lining from the web by the punch and guide the severed lining through the tubular portion of the die to position in the cap.

hucB /

2726. In apparatus for assembling linings in closure caps as claimed in claim ²⁴ 27, means operative in sequence with the operation of the punch and die to engage the lining in the cap and strip the lining from the punch and die as they recede from the cap.

hucB /

2728. In apparatus for assembling linings in closure caps as claimed in claim ²⁴ 27, a plunger slidably mounted in the punch and normally urged to predetermined position within the punch, and means to actuate and engage said plunger with the lining positioned in the cap by the punch to hold the lining in the cap and strip the same from the punch and die as they recede from the cap.

hucA

hucA

2730. In apparatus for assembling and securing linings to sealing pads in closure caps, punch and die mechanism, a cap support, means to intermittently feed and position caps on the support relative to the punch and die mechanism, means to heat the cap pads as they are fed to the punch and die mechanism, means to feed a web of lining material having an adhesive surface normally non-viscous to the punch and die mechanism for the severing of lining from the web and positioning of the linings relative to the heated pads in the caps by the punch and die mechanism, and means carried by the punch to forcibly impinge the lining against the heated cap pad and effect adhesion of the lining to the cap pad, said means being actuated in sequence to the positioning of the severed lining relative to the cap pad by the punch and die mechanism.

hucA 2/17
can for a

31. In apparatus for assembling and securing impervious linings to sealing pads in closure caps, punch and die mechanism, a cap support, means to intermittently feed and position caps on the support relative to the punch and die mechanism, and means to feed a web of lining material having an adhesive surface normally non-viscous from a roll of such web to the punch and die mechanism to be severed into linings and positioned in the caps by the punch and die mechanism

comprising an intermittently actuated roller, and rollers to guide the web from the web roll to and maintain the web in contact with the actuated roller.

28 36. The method of assembling linings for sealing pads in receptacle closure caps, consisting in providing caps with sealing pads therein and a web of lining material arranged with an adhesive surface non-viscous at normal temperature, heating the pads in the caps, and severing linings from the web of lining material and assembling the linings as they are severed from the web in the caps with the adhesive surface in contact with the heated pads to render the adhesive viscous and effect adhesion of the linings to the pads.

29 36. The method of assembling linings for sealing pads in receptacle closure caps, consisting in providing caps with sealing pads therein and a web of lining material arranged with an adhesive surface non-viscous at normal temperature, heating the pads in the caps, severing linings from the web of lining material and assembling the linings as they are severed from the web in the caps with the adhesive surface in contact with the heated pads to render the adhesive viscous and effect adhesion of the linings to the pads, and then placing the linings in the caps under heat and pressure to effect an intimate adhesion between the linings and pads.

30 36. The method of assembling linings for sealing pads in receptacle closure caps, consisting in providing caps with sealing pads therein and a web of lining material arranged with an adhesive surface non-viscous at normal temperature, heating the pads in the caps, severing the linings from the web of lining material and assembling the linings as they are severed from the web in the caps with the adhesive surface in contact with the heated pads to render the adhesive viscous and effect adhesion of the linings to the pads, then placing the linings in the caps under heat and

pressure to effect an intimate adhesion between the linings and pads, and then placing the linings assembled in the caps under pressure during the cooling thereof. *Qiy*

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per B

35. The method of assembling linings for sealing pads in receptacle closure caps, consisting in providing caps with sealing pads assembled therein and a web of lining material having an adhesive surface non-viscous at normal temperature, severing linings from the web of lining material and assembling the linings as they are severed from the web in the caps with the adhesive surface in contact with the pads, then placing the linings in the caps under heat and pressure to render the adhesive viscous and effect an intimate contact between the linings and pads.

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Div. 14

Room 102-A

220

Paper No. 2

Address only
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DEPARTMENT OF COMMERCE
 UNITED STATES PATENT OFFICE
 WASHINGTON

All communications respecting this
 application should give the serial number,
 date of filing, and name of
 the applicant

R/V

Please find below a communication from the EXAMINER in
 charge of this application.

Thomas E. Robertson
 Commissioner of Patents.

G. P. O. 11-2002

Applicant: John A. Johnson

John O. Seifert
 277 Broadway
 New York, N. Y.

Ser. No. 409793
 Filed Nov. 26, 1929
 For METHOD AND APPARATUS
 FOR ASSEMBLING LININGS IN
 RECEPTACLE CLOSURE CAPS

SEP 10 1930

This case has been examined and the art cited is as
 follows:

(Filed Feb. 35, 1928)
 Lundell et al, 1,738,781, Dec. 10, 1929, 113-80
 Bogdanffy, 1,189,608, Jan. 25, 1916, 113-80
 Snyder, 1,488,034, Aug. 28, 1923, 271-2.2

The omitted lead line from the numeral 100 to the p
 mentioned on page 15, lines 14 and 15, should be applied t
 figure 13 of the drawings.

A noun properly designating the non-viscous material
 carried by the linings or pads described on page 10, lines
 4 and 5, should be inserted after "non-viscous."

Claims 1, 3, and 9 are rejected as completely met in
 the patent to Bogdanffy, above cited.

Claims 2, 5, 7, 11, 12, and 13 are rejected as failing
 to patentably distinguish from the patent to Bogdanffy. All
 the elements called for in the patent are present as is ob-
 vious. These claims cannot be allowed merely on the purpose
 of the construction set forth in the introductory clauses,
 nor upon the statement that the articles fed are "caps with
 sealing pads assembled thereon" (claim 2). It is true the
 patentee is doing a different thing, but the construction
 called for by these claims and the construction of the patent
 are identical. It is well settled that claims must distinguish
 structurally from a reference. Applicant uses the patentees

409733--2

construction for securing a disk in a metal cap for the purpose of securing impervious linings to sealing pads already in the cans.

In claim 5, line 12, are (first occurrence) should be canceled.

In claim 7, line 12, cap and should be inserted before linings.

+ Claim 14 is rejected as failing to patentably distinguish from Bogdanffy, it being held that no invention would be involved in substituting an electric heating unit for the gas heating unit of Bogdanffy.

Claims 17 and 18 are rejected as failing to patentably distinguish from Bogdanffy, it being held that no invention would be involved in moving the feeding rolls 70 for feeding the web 67, to the opposite side of the guide along which the web is fed from that on which the web supply 68 is located. No invention would be involved in introducing a slack producing mechanism such as disclosed in the patent to Snyder, above cited, between the web supply 68 and the feeding roll 70 of Bogdanffy. Furthermore, the construction by which the slack portion is produced is not brought into the claims. Referring to claim 18 it is held that no invention would be involved in providing a set of intermittently operating feed rolls, operating separately on the web shown at the bottom of figure 1 at the right, in addition to the web looper between the web reel 68 and the feed rolls 70.

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Amend
Claim 31 is rejected as failing to patentably distinguish from Bogdanffy or Lundell in view of Snyder. No invention would be involved in providing Snyder's feed and guide roller construction shown in Fig. 1 at the right in feeding and guiding the web in the web rolls of either Bogdanffy or Lundell.

Claims 4, 6, 8, 10, 15, 18, 19 to 30 inclusive, and claims 32 to 35 inclusive are allowable as at present advised.

Claims 6, 19, and 20 should be rewritten to include all the elements in view of the rejection of claims 5 and 18.

*Ass**N. J. Brumbaugh*

Examiner.

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Ed
10512 $\frac{3}{2}$ 

U.S. PATENT OFFICE, THE UNITED STATES PATENT OFFICE.

Division 14, Room 102 Annex,
 Applicant: John A. Johnson,
 Serial No. 409,793,
 Filed November 26, 1929,
 For Method and Apparatus for Assembling Linings in Receptacle
 Closure Caps.

U. S. PATENT OFFICE
 MAR 9 - 1931
 DIVISION 14

Commissioner of Patents,
 Washington, D. C.

In response to the official communication of September 10, 1930, in the above entitled application please amend as follows:

Page 10, line 4, after "non-viscous" insert -, such as caoutchouc, -.

✓ Cancel claim 1.

✓ Claim 2, line 4, change "thereon" to - therein -; line 5, correct the spelling of "temperature"; line 7, after "mechanism" insert - to heat the pads in the caps -, and line 10, after "caps" insert - with the adhesive surface opposed to the pads -, and after "effect" insert - a fusion of the adhesive and -.

Claim 3, line 2, after "mechanism" insert - having a diameter less than the pads -; line 7, change "linings" to - lining disks of less diameter than the pads -; line 8, change "caps" to ~~heated caps~~ with the adhesive surface opposed to the pads to effect a fusion of the adhesive and ~~uniting the linings to the pads~~ and line 9, change "caps" to - cap pads -.

Claim 5, line 12, cancel "are" first occurrence.

✓ Claim 7, line 10, after "linings" insert -in the caps-.

✓ Cancel claim 9.

Claim 11, line 5, after "support" insert - relative -; line 7, before "to heat" insert - as they are fed to the

punch and die mechanism --.

Claim 12, line 5, after "means" insert - relative -;
line 6, after "cups" insert - as they are fed to the punch
and die mechanism -; line 7, change "to" to - intermittently
operative to successively -; and line 12, before "adhesion"
insert - infusion of the adhesive and --.

Claim 13, line 4, after "support" insert - relative-;
line 5, after "cups" insert - as they are fed to the punch
and die mechanism -; and last line, before "adhesion" insert
- infusion of the adhesive and --.

Claim 14, line 9, after "means" insert - and superposed
to the travel of the cups --.

✓ Claim 17, last line, after "mechanism" insert - in the
inoperative position thereof --.

✓ Claim 18, last line, change the period to a comma and
add - the web drawing and delivering means being actuated in
synchronism with each other, --.

✓ Claim 30, line 4, change "in" to - on -; and line 8,
pluralise "lining".

Cancel claim 31.

REMARKS:

Instructions are being forwarded herewith to the of-
ficial draftsman to correct the drawings by applying the lead
line from the numeral 100 to the post mentioned on page 15,
lines 14 and 15.

The noun "mastic" designating the non-viscous mater-
ial carried by the linings has been inserted after "non-
viscous" in line 4 on page 10.

Claim 1 has been cancelled without prejudice to the
remaining claims because, if the claim was amended to overcome
the cited patent No. 1,169,608, Bogdanffy, it would overlap the
remaining claims.

Claim 2 has been amended to more clearly set forth the
invention. It is believed claim 2 is allowable over the cit-

ation Bogdanffy, No. 1,169,608, as the structure of said citation could not be used to accomplish the results claimed in claim 2 because if the caps having sealing pads therein were delivered to the gas burner 65 the sealing pads would be scorched thus rendering the cap unfit for use. Claim 2 calls for means for producing an elevated temperature and not means for applying heat directly to the inner portion of the cap as disclosed by the cited patent of Bogdanffy.

Claim 3 has been amended to specifically set forth that the diameter of the punch and die mechanism is less than the diameter of the pads and the lining disks are of less diameter than the diameter of the pads and caps. Claim 5 is believed to be in condition for allowance as the apparatus of the citation Bogdanffy does not show means to guide and position the linings centrally of the caps or the pads therein as it is not necessary in said apparatus to centrally position the disk of binding material in caps, the purpose of the binding material of said citation being different than that of the lining disk of the application, as set forth in the specification of the application on page 12, lines 17 to 20, inclusive, which is to protect the sealing pads from the deteriorating action of the contents of a receptacle to which the closure is applied and not to adhere sealing pads in caps.

Reconsideration and allowance of claims 5 and 7 is requested as it is believed said claims patentably differentiate over the citation Bogdanffy, No. 1,169,608. The citation Bogdanffy does not disclose means to place the sealing pads under heat and pressure, but the binding material is heated, then the sealing pad is positioned in the caps and then pressure is applied to the sealing^{Re 1.} pads. The means referred to in claims 5 and 7 are the heated plungers 157 of the application, and claim 7 differentiates over claim 5 by setting forth the additional means of placing the linings and sealing pads under

pressure during the cooling of the adhesive, which is essential to produce a durable cap of this type.

Claim 9 has been cancelled without prejudice to the remaining claims.

Reconsideration and allowance of claim 11 is requested on the same grounds given in connection with claims 5 and 7. Claim 11 differentiates over claims 5 and 7 by setting forth that the heat and pressure means is actuated in synchronism with the actuation of the punch and die mechanism which is essential to have a continuously operative apparatus to produce a maximum number of caps.

Claim 12 has been amended to more clearly set forth the invention and more specifically set forth the structure of the means to deliver the caps to the cap feeding and positioning means. Claim 12 is believed to be allowable over the citation Bogdanffy, No. 1,169,608, as said citation does not show intermittently operative means to successively deliver caps to cap feeding strips 38 of the citation. The caps in said citation are delivered to said feeding strips directly from the chute 41, which is not positive in action. The delivering means referred to in the claim is the disk 18 and the ejector member 37 of the application.

Claim 13 has been amended to more clearly set forth the invention and said claim is believed ^{to be} allowable over the citation Bogdanffy for the reasons given in connection with claim 12. Claim 13 differentiates over claim 12 by specifically setting forth that the delivery means or ejector member 37 is operative in sequence with the actuation of the cap feeding and positioning means.

Claim 14 has been amended to more clearly describe the structure of the apparatus, and claim 14 is believed to be allowable over the citation Bogdanffy, No. 1,169,608, as the use of an electric heating unit in place of the gas heating

unit in combination with the other elements of claim 14 patentably differentiate the claim over the citation since a better result is produced that has heretofore been possible. The electric heating unit co-operates with the other elements of the claim to perform a single function and thus forming a unitary and patentable entity, which constitutes patentable invention because the substitution of an electric heating unit for a gas heating unit in combination with the other elements produces a result not possessed by the combination before the introduction of the new unit and producing the result of heating the pads without scorching which cannot be avoided by the use of a gas flame.

Claim 17 has been amended to more clearly describe the invention and said claim is believed to be allowable over the citations Bogdanffy, No. 1,169,608 and Snyder, No. 1,466,034, as the specific structure claimed is not disclosed by either of said citations. The guide 69 of the citation Bogdanffy is not interposed between the punch and die mechanism and web supporting means but is located before the web feeding rollers 70, as stated on page 3, lines 110 to 113, of said citation. The particular arrangement of the punch and die mechanism, and web feeding means is not disclosed by the citation Snyder. Therefore, allowance of claim 17 is requested.

Claim 18 has been amended to more specifically set forth the structure of the web feeding means and it is believed to be allowable over the citations Bogdanffy No. 1,169,608 and Snyder, No. 1,466,034, as the specific arrangement and operation of the feeding rollers, one adjacent the roll of web and the others adjacent the punch and die mechanism to assure a positive feed of the web without undue strain thereon, is not disclosed by said citations. The material of the web used in the invention of the present application is tin foil, the use of which raises problems that are entirely different than those accompanying the use of paper webs, which type of

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web is used in the operation of the apparatus of the aforementioned citations. It is believed the specific arrangement of the feeding rollers as disclosed by the present application to overcome the problems of feeding a web of tin foil required the use of the inventive faculty to devise and, therefore, the claim is believed to be allowable.

Claim 30 has been amended to correct obvious errors. This claim has been deemed to be allowable.

Claim 31 has been cancelled without prejudice to the remaining claims.

Claims 6, 19, and 20 have not been rewritten as claims 5 and 18 have not been cancelled, said latter claims being believed to contain allowable subjects-matter.

The application is believed to be in condition for allowance and favorable consideration is requested.

Respectfully submitted,

John B. Seifer
Attorney for Applicant.

277 Broadway,
New York, N.Y.

March 5th, 1951.

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*Letter to Dept
Print*

MAIL DIVISION

MAR - 7.31

U.S. PATENT OFFICE THE UNITED STATES PATENT OFFICE.

Division 14, Room 102 Annex,
 Applicant: John A. Johnson,
 Serial No. 409,793,
 Filed November 26, 1929,
 For Method and Apparatus for Assembling Linings in Receptacle
 Closure Caps.

Hon. Commissioner of Patents,
 Washington, D.C.

ACCOUNT

Sir:-

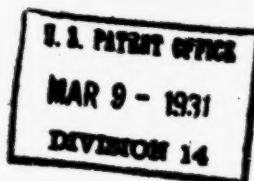
It is requested that the official draftsman correct
 the drawings in the above entitled application, by applying
 a lead line from the numeral 100 to a post in Figure 13, as
 indicated in red ink in the accompanying print, charging the
 cost to my deposit account ^{and} advising me of said charge.

Respectfully,

John O. Siefert.
 Attorney for Applicant.

277 Broadway,
 New York, N.Y.

March 5th, 1931.



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MARCH 22 1931

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Room 102 Annex

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Page No. 5

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DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
WASHINGTON

JUL 30 1931

Communications respecting this
application should give the serial number,
date of filing, and name of
the applicant

Please find below a communication from the EXAMINER in
charge of this application.

Thomas E. Robertson
Commissioner of Patents

July 30, 1931

Applicant: John A. Johnson

John O. Seifert
277 Broadway
New York, N. Y.

Ser. No. 409,793
Filed Nov. 28, 1929
For Method and Apparatus for Assembling Linings in Receptacle Closure Caps.

This case, as amended March 7, 1931, has been reexamined.

Applicant's argument has been considered, but no reason is seen for reversing the last office action in connection with the rejection of claim 3 on Bogdanffy of record. The patent completely meets this claim in so far as the elements called for are concerned, and the claim cannot be allowed merely on various functional statements included therein.

Claim 35, formerly considered allowable, is rejected as completely met in the following patent to Warth.

Warth 1,798,280 Jan. 6, 1931 113-80.

Claims 3 to 8, inclusive, claims 10 to 30, inclusive, and claims 32 to 34, inclusive, appear allowable.

Rose

J. R. Smith
Acting Examiner.

27/5.

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Encl 6
B

IN THE UNITED STATES PATENT OFFICE.

Division 14, Room 102 Annex,
Applicant: John A. Johnson,
Serial No. 409,793,
Filed November 26th, 1929,
For Method and Apparatus for Assembling Linings in Recept-
acle Closure Caps,

Hon. Commissioner of Patents,
Washington, D.C.

U. S. PATENT OFFICE
SEP 8 - 1931
DIVISION 14

Sir:-

In response to the official communication of July 30,
1931, in the above entitled application, please amend as
follows:

Cancel claims 2 and 35.

The rejected claims having been cancelled without
prejudice to the remaining claims the application is be-
lieved to be in condition for allowance and favorable con-
sideration is requested.

At the final numbering of the claims it is requested
that the claims be renumbered successively as filed, so
that, claims 3 to 8, inclusive, will be claims 1 to 6, in-
clusive, with the reference numeral "5", in original claim
6, line 2, changed to - 3 --.

Claims 10 to 30, inclusive, renumbered as claims 7 to
27, inclusive. Original claims 19 and 20, line 2 of each
claim, change reference numeral "18" to - 15 --. Original
claims 25 and 26, line 2 of each claim, change reference
numeral "24" to - 21 --. Original claims 28 and 29, line 2
of each claim, change "27" to - 24 --. Claims 32 to 34, in-
clusive, renumbered as claims 28 to 30, inclusive.

Respectfully,

277 Broadway,
New York, N.Y.

September 4, 1931.

John O. Saifert.
Attorney for Applicant.

Encl
note

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ADDRESS ONLY
THE COMMISSIONER OF PATENTS
WASHINGTON, D. C.
Div. 14
MC

181

Serial No. 409,793

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
WASHINGTON

September 19, 1931

John A. Johnson

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

Your APPLICATION for a patent for an IMPROVEMENT in
METHOD AND APPARATUS FOR ASSEMBLING LININGS IN RECEPTACLE
CLOSURE CAPS

filed Nov. 26, 1929 has been examined and ALLOWED with 30 claims.

The final fee, TWENTY-FIVE DOLLARS, WITH \$1 ADDITIONAL FOR
EACH CLAIM ALLOWED IN EXCESS OF 20, must be paid not later than
SIX MONTHS from the date of this present notice of allowance.
If the final fee be not paid within that period, the patent
will be withheld, but the application may be renewed within one
year after the date of the original notice with a renewal fee
of \$25 and \$1 additional for each claim in excess of 20.

The office delivers patents upon the day of their date,
on which date their term begins to run. The preparation of the
patent for final signing and sealing will require about four
weeks, and such work will not be begun until after payment of
the necessary final fee.

When the final fee is paid, there should also be sent,
DISTINCTLY AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE
OF THE INVENTION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF
ALLOWANCE (which is the date of this circular), DATE OF FILING,
and, if assigned, the NAMES OF THE ASSIGNEES.

If it is desired to have the patent issue to an ASSIGNEE
OR ASSIGNEES, an assignment containing a REQUEST to that effect,
together with the FEE for recording the same, must be filed in
this office on or before the date of payment of the final fee.

After issue of the patent, uncertified copies of the
drawings and specifications may be purchased at the price of
TEN CENTS EACH. The money should accompany the order. Postage
stamps will not be received.

The final fee will NOT be received from other than the
applicant, his assignee or attorney, or a party in interest as
shown by the records of the Patent Office.

NOTICE.—WHEN THE NUMBER OF CLAIMS ALLOWED IS IN EXCESS OF 20,
NO SUM LESS THAN \$25 PLUS \$1 ADDITIONAL FOR EACH
CLAIM IN EXCESS OF TWENTY CAN BE ACCEPTED AS THE
FINAL FEE.

Respectfully,

Thomas E. Robertson
Commissioner of Patents.

John O. Seifert
277 Broadway
New York, N. Y.

UNCERTIFIED COPIES WILL NOT BE ACCEPTED.

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U. S. Patent Office

JOHN O. SEIFERT
AND
JOHN A. SEIFERT
PATENTS AND PATENT CAUSES
277 BROADWAY
(CHANDLER STREET)
NEW YORK, U. S. A.

U. S. Patent Office

March 8, 1932.

Hon. Commissioner of Patents,
Washington, D.C.

Sir:

I enclose check for \$35.00 to be applied as the final fee in the application of John A. Johnson, for method and apparatus for assembling linings in receptacle closure caps, filed November 26, 1929, Serial No. 409,793, and allowed September 19th, 1931, with thirty claims.

Respect fully.

John O. Seifert

JAS-EL.

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TITLE REPORT

No. 1,852,578

Name John A. Johnson

The title appears from the assignment records to be vested in:

inventor

Examined up to and including 4/3/33

This certificate dated 4/13/33

B. H. Gray
Chief of Assignment Division

No further assignments appear to have been received for record including

4/10/33

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Div. 14 Room 5097

R/MO

Paper No. 8

Address only
The Commissioner of Patents,
Washington, D. C.
and not any official by name

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
WASHINGTON

All communications respecting this
application should give the serial number,
date of filing, and name of
the applicant

MAILED

APR 20 1933

(Copy sent to Patentee)
Please find below a communication from the EXAMINER in
charge of this application

APR 18 1933

Thomas E. Robertson
Commissioner of Patents

Applicant: John A. Johnson

John O. Seifert
277 Broadway
New York, N. Y.

Ser. No. 400,793
Filed Nov. 28, 1929
For Method and Apparatus
for Assembling Linings
in Receptacle Closure
Caps.
Patent No. 1,852,578 granted
Apr. 5/32

The case, above referred to, is forwarded to the Examiner
of Interferences because it is adjudged to interfere with others,
hereafter specified. The question of priority will be determined
in conformity with the Rules. The interference will be identified

as No. 66201 On or before MAY 15 1933

the statement demanded by rule 110 must be sealed up and filed
with the subject of invention, and name of party filing it,
indorsed on the envelope. The subject-matter involved in the
interference is

Count 1. The method of assembling linings for sealing
pads in receptacle closure caps, consisting in providing
caps with sealing pads therein and a web of lining material
arranged with an adhesive surface non-viscous at normal tem-
perature, heating the pads in the caps, and severing linings
from the web of lining material and assembling the linings
as they are severed from the web in the caps with the adhe-
sive surface in contact with the heated pads to render the
adhesive viscous and effect adhesion of the linings to the
pads.

Count 2. The method of assembling linings for sealing
pads in receptacle closure caps, consisting in providing
caps with sealing pads therein and a web of lining material
arranged with an adhesive surface non-viscous at normal tem-
perature, heating the pads in the caps, severing linings
from the web of lining material and assembling the linings
as they are severed from the web in the caps with the adhe-
sive surface in contact with the heated pads to render the
adhesive viscous and effect adhesion of the linings to the
pads, and then placing the linings in the caps under heat
and pressure to effect an intimate adhesion between the lin-
ings and pads.

Count 3. The method of assembling linings for sealing
pads in receptacle closure caps, consisting in providing caps
with sealing pads therein and a web of lining material ar-
ranged with an adhesive surface non-viscous at normal tem-
perature, heating the pads in the caps, severing the linings
from the web of lining material and assembling the linings
as they are severed from the web in the caps with the adhe-
sive surface in contact with the heated pads to render the
adhesive viscous and effect adhesion of the linings to the
pads, then placing the linings in the caps under heat and
pressure to effect an intimate adhesion between the linings
and pads, and then placing the linings assembled in the caps
under pressure during the cooling thereof.

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Serial No. 409,793 - - 3
Patent No. 1,852,578

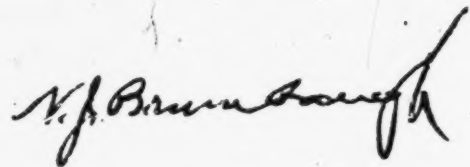
The interference involves your patent above identified and an application for Method of Manufacturing Bottle Caps and Apparatus Therefor, filed by Albin H. Warth, of Baltimore, Md., whose post office address is c/o Crown Cork & Seal Company, Inc., Baltimore, Maryland, whose attorneys are Cushman, Darby & Cushman, American Security Bldg., Washington, D. C., and whose assignee is Crown Cork & Seal Company, Inc., Baltimore, Maryland, a corporation of New York.

The relation of the counts of the interference to the claims of the respective parties is as follows:

COUNTSWARTHJOHNSON1
2
31
2
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Counts Compared.

dst



Examiner, Division 14.

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APR 18 1933

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INTERFERENCE

Interference No. 66201 Paper No. 2

Name, John A. Johnson

Serial No. 409,793 (Patent No. 1,852,578)

Title, Method and Apparatus for Assembling Linings in Receptacle
Closure Caps

Filed, November 28, 1929 granted April 5, 1932

Interference with Albin H. Warth

DECISIONS ON MOTION

Ex'r of Interferences, _____ Dated, _____

Board of Appeals, _____ Dated, _____

DECISIONS ON PRIORITY

Ex'r of Interferences, Adverse Dated, Apr 14/34

Board of Appeals, _____ Dated, _____

Court, _____ Dated, _____

REMARKS:

This should be placed in each application or patent involved in interference in addition to the interference letters by Primary Examiner.

37/57

12-2222
U. S. GOVERNMENT PRINTING OFFICE: 1922

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1929

CONTENTS:

1 Application	papers	26.	
2 Reg	Sept 10, 1930	27.	
3 Arnold & A	Mich 7, 1931	28.	
4 Letter To Diff	print Mich 7, 1931	29.	Not returned
5 Reg	July 30, 1931	30.	
6 Arnold & B	Sept 5, 1931	31.	Issue 2
7 File Report	Apr 13, 1933	32.	
8 Interf Letter	APR 20 1933	33.	
9 Interf. Blank		34.	
10		35.	
11.		36.	
12.		37.	
13.		38.	
14.		39.	87/58
15		40.	
16.		41.	
		42.	

DEFENDANT'S EXHIBIT A

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE

To all persons to whom these presents shall come, Greeting:

THIS IS TO CERTIFY that the annexed is a true copy from the records
of this office of the File Wrapper and Contents, in the
matter of the

Letters Patent of

Albin H. Warth, Assignor to
Crown Cork & Seal Company, Inc.,

Number 1,899,783.

Granted February 28, 1933.

for

Improvement in Bottle Caps and Methods of Manufacturing Same.

IN TESTIMONY WHEREOF I have hereunto set my
hand and caused the seal of the Patent Office to be
affixed, at the City of Washington, this **twenty-fifth**
day of **January**, in the year of our Lord one
thousand nine hundred and thirty-four and of the
Independence of the United States of America the
one hundred and fifty-eighth.

ATTEST:


J. C. Sullivan
Chief of Division.

Conway P. Cox
Commissioner of Patents.

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Serial of 1933

492546

DIV.

#4262

PATENT NO.

DATED FEB 2 1933

52-23

(EXR'S BOOK)

Name ALBIN H. WIRTH

Inventor of Crown Cork & Seal Company, Inc.
of Baltimore, Md. a corp. of New York

of BALTIMORE

State of MARYLAND

Invention

BOTTLE CAP AND METHOD OF MANUFACTURING SAME

ORIGINAL

RENEWED

APPLICATION FILED COMPLETE OCT 31 1930

Petition, Specification,
Oath, First Fee, etc.
+ sheets Drawings,

OCT. 31 1930

52/155 74 6433

Examined and passed for Issue MAR. 26 1933

H.W. Cochran Ex. Dto. 68

Notice of Allowance JAN 26 1933

Final Fee 8 20 Feb 2 1933

Examined and passed for Issue

Ex. Dto.

Notice of Allowance

Final Fee

Attorney CROOK, BRYANT & BERRY 1001 & BRYANT BLDG CITY

Solicitor - Cushman, Bryant, Dwyer & Cushman, American Security

Associate Attorney ALB 3 960 Wash, D.C.

No. of Claims Allowed 6 First Claim 1 in O. G. Class 215-39

Title as Allowed

BOTTLE CAP AND METHOD OF MANUFACTURING

SAME NAME

4/2

Division of App. No. 360,842 Filed July 2, 1929

948

492546 - /

Application for U. S. Letters Patent

13616

CUSHMAN, BRYANT & DARBY

ATTORNEYS AT LAW

OWNERS OF IN PATENT CAUSES

WASHINGTON, D. C.

CORNER, NORTHWEST

WASHINGTON, D. C.

OCT 11 1930

72356 A - Cl. 1st

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ext. 67-10

Petition



To the Honorable Commissioner of Patents
Washington, D. C. U. S. A.

Your petitioner, ALBIN H. WARTH,

a citizen of the United States,

residing in the City of Baltimore,

and State of Maryland,

and whose post-office address

is c/o Crown Cork & Seal Co., Inc., Baltimore, Maryland,

pray that Letters Patent may be granted to

him for the improvement in

BOTTLE CAP AND METHOD OF MANUFACTURING SAME,

set forth in the annexed specification

And he hereby appoints CUSHMAN, BRYANT & DARBY, a firm composed of Arlon V. Cushman, Arthur L. Bryant and John J. Darby, Jr., of the City of Washington, District of Columbia, whose register number is 7198, his attorneys, with full power of substitution and revocation, to prosecute this application, to make amendments therein, to sign his name to the drawings, to receive the Letters Patent, and to transact all business in the Patent Office connected therewith

Albin H. Warth
(Write full name in full.)

Specification

Be All Whom it May Concern

Know all Men, that I, ALBIN H. WARTH,

a citizen of the United States,

residing in the City of Baltimore,

and State of Maryland,

have invented new and useful

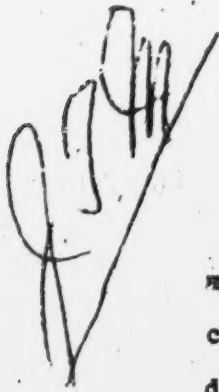
improvements in

BOTTLE CAP AND METHOD OF MANUFACTURING SAME,

of which the following is a specification:

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My invention relates to bottle caps and the method of making same, and more particularly to a cap consisting of a metallic shell containing a cushion disk having what is known as a protecting center disk, and to the method of applying this center disk.

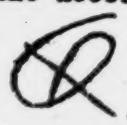
Bottle caps of the type to which my invention relates have heretofore been extensively used for sealing bottles containing mineral waters and other fluids having a deleterious action upon the cushion disk within the cap, particularly when this disk is made of composition cork. Ordinarily the facing ^{center} disk has been made of tin foil cemented or otherwise attached directly to the cushion disk, or secured

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thereto by means of a fibrous backing having applied thereto a dry adhesive made tacky by means of a thin film of moisture applied to the cushion disk.

It has been attempted to secure the facing disk upon the cushion disk by means of a liquid cement, but this has proven impracticable because, in order to secure a satisfactory bond, it was necessary to apply the adhesive in quantity having such thickness that, upon the application of pressure to secure the desired intimate relation between the facing disk and the cushion disk, there was a tendency of the disk to slide into an eccentric position in relation to the disk. In order to permit the effective sealing of a bottle with a cap having a tin center or other protective facing, it is essential that the facing disk be accurately centered in relation to the cushion disk so as to avoid any possibility of the neck of the bottle sealing against the facing disk, since this would result in the presence of minute channels or voids at the point of contact of the facing disk with the neck of the bottle. Furthermore, at the points where the line of contact crossed the periphery of the disk, there would be exposure of a small area of the cushion disk to the contents of the bottle.

With the above conditions in mind, the object of my present invention is to provide a bottle cap having a protecting center disk secured in position by a fusible medium devoid of moisture, and thus avoid any possibility of slippage of the disk while pressing it into the necessary intimate relation with the cushion disk.



in 3

The medium used for securing the facing disk in place is of itself ^{water}insoluble and acid resisting and, being fusible at low temperatures, will form a very thin coating between the facing disk and the cork so as to preclude the possibility, in the event of imperfections in the facing disk, of the cork being attacked by the fluid contents of a bottle. $\sqrt{9}$

Insert D'4

The cementing medium may be readily handled, is not affected by ordinary changes of temperature or atmospheric conditions, may be readily cut to size simultaneously with the cutting of the facing disk so as to secure a bonding stratum co-extensive with the area of the facing disk, and may be quickly fused to secure the desired bonding action between the facing disk and the cushion disk.

In addition to the foregoing characteristics, I am enabled to effectively use a facing disk of fibrous material, since the nature of the bonding medium is such as to firmly adhere to hard finished papers as well as to natural cork or composition cork.

In the commercial production of such caps, it is essential that the facing disk, during production, be cut from a strip of material, and since the edges of the disk cannot be protected by the same material used for waterproofing the surface of the disk, I have found it desirable, after the application of the facing disk, to apply, to the entire surface of the cap exposed interiorly of the cap, a very thin protecting surfacing of water repellent material. This not only serves to prevent adherence of the cork to the neck of the bottle, and to exclude atmospheric air from the exposed portions of the cushion disk before

the cap has been applied to a bottle so as to prevent darkening of the cork by oxidation, but will at the same time, protect the perimeter of the center facing disk to an extent to minimize likelihood of the absorption of moisture at the edge of the disk.

Bottle caps of the general type of which my invention relates must be produced at a very low cost, and the various materials entering into same and the method of assembling and finishing are matters of great desideratum.

The herein described method of making the bottle cap of my invention relates merely to the manner of applying the center facing disk and finishing the cap, it being understood that the assembling of the metal shell and the mounting of the cushion disk therein are entirely independent operations, preparatory to the practicing of the method of my present invention.

The invention consists primarily in a bottle cap embodying therein a metallic shell, a cushion disk within

per 8 said shell, a facing disk of water repellent, gas impermeable ~~such as a relatively hard, high-gloss, air-water-repellent paper provided with~~ a fibrous material, of smaller diameter than, and

concentric with, said cushion disk, and a thin stratum ~~of an insoluble, fusible, cementitious material, co-extensive in area with said facing disk, between said facing disk and said cushion disk; and in such other novel characteristics as are hereinafter set forth and described, and to the method of making said caps, all as hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.~~ *a water-repellent, such as gally powder*

Referring to the drawings:

Figure 1 is a bottom plan view upon an enlarged

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scale of a bottle cap embodying the invention.

Figure 2 is a section on the line $\frac{2-2}{m}$ of Fig. 1.

Figure 3 is a vertical section illustrating the first stage of applying the center disk to the cushion disk.

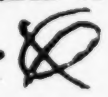
Figure 4 is a similar view illustrating the final stage; and

Figure 5 is a view illustrating a stage intermediate those illustrated in Figs. 1 and 2, used when it is desired to apply a wax finish to the cushion disk.

Like letters refer to like parts throughout the several views.

In the accompanying drawings, notwithstanding that the caps themselves are shown upon an enlarged scale, the dimensions of the facing disk and the intermediate bonding stratum are of greatly increased thickness as compared with the actual materials used, even when compared with the enlarged scale of the other parts of the cap.

A bottle cap embodying the invention consists of the usual metallic shell *a* having a fluted skirt *b*. Secured within this shell is a cushion disk *c*, which may be either of natural, or of composition, cork. Composition cork is more extensively used than natural cork, and the employment of a tin or other center facing disk is particularly desirable with composition cork cushion disks, since the contents of a bottle will more readily attack the binder of the composition cork than it will natural cork.

It is essential, to secure a reliable seal, particularly with carbonated beverages, that the neck of the bottle seal directly against the cushion disk, and not against the center facing disk. This is generally understood, and I follow, in the bottle cap of my present invention, the old practice of using a center facing disk *d*, the diameter of which is relatively less than that of the cushion disk, so that when the cap is applied to a bottle, the lip of the bottle will be positioned between the facing disk and the skirt *b*, the contacting area being such as to bring the facing disk to a point at the inner edge of such contacting area. 

While heretofore tin centers have been extensively used, it has been found impracticable to use paper disks for this purpose, because in order to make them impervious to gas, and non-absorbent, the finish of the paper had to be such as prevented the formation of a sufficiently good bond between the facing disk and the cushion disk to permit the practical commercial production of such caps.

To correct this condition, it has long been the practice to bond a metal foil, such as tin, ^{or aluminum} to a fibrous backing, to which latter the cement would firmly anchor. With this construction of the facing disk it was the practice to apply a dry adhesive to the fibrous backing strip and to make this adhesive tacky by the application of moisture to the cushion disk immediately prior to the coating of the facing strip and the application of the disk cut therefrom to the cushion disk.

While caps, having a facing disk of the character immediately above described, have been extensively used, their production cost, as compared with the required low cost of such caps, has been very high.

In the cap of my invention, the center disk d is composed of a glazed hard paper, such as is generally known as express paper, sulphite paper or bleached Kraft ^{water-finish, i.e., high-gloss finish,} paper having a ~~waterleaf finish~~. Such papers are, of themselves, independently of the finish, fairly non-absorbent, and when required for pasting purposes, are usually provided with a dry gummed surface. The process of producing such gummed paper results in a curl in the paper.

While such hard tough papers are extremely desirable because of their inherent non-absorbent, gas impervious qualities, their use in bottle caps of the type to which

26 my invention relates was impracticable, prior to my invention, because of the difficulties of feeding and cutting previously gummed paper and of cementing same to the cushion disk.

In the cap of my invention, however, to obviate these difficulties, I use ungummed paper of the type above referred to, and secure it to the cushion disk by means of a disk of what is known as gutta-percha tissue, which material, in strip form, may readily be handled in a machine and collated with a facing disk paper strip so as to permit a disk of the paper and a disk of the gutta-percha to be simultaneously cut by the same dies. This not only simplifies the production of the cap, but results in a bonding stratum g between the facing disk and the cushion disk co-extensive in area with the facing disk itself. The strip of paper from which the disk g is cut is indicated at d', while the strip of gutta-percha forming the stratum g is indicated at e'.

Gutta-percha is particularly desirable as a bonding medium, not only because it ensures the distribution of the bonding stratum throughout the entire area of the facing disk, but because it will readily adhere, when softened to the desired extent, to the cork or composition cork, and to hard paper. Furthermore, it possesses the qualities of being non-absorbent and non-impervious to gases. The tissue itself is very thin, about a thousandth of an inch, and when softened, instantly adheres to the cork and to the paper, and is not subject to side sliding or slippage, such as liquid cements. The gutta-percha is not affected by fruit acids, minerals, C⁰_A or other

ingredients present in the fluid contents of bottles with which such caps are designed to be used.

The gutta-percha may be fused or melted at temperatures sufficiently low to avoid injury to the other previously assembled portions of the cap, and will return to its former solid form at normal temperatures with considerable rapidity.

In the finished cap, particularly when such caps are desired for use with spring water or mineral waters, it is desirable, after the application of the center disk, to apply a very thin superficial coating of water repellent material, such as paraffin, Ceresin or other waxes, throughout the exposed faces of the cushion and center disk. This coating serves to prevent adherence of the cushion disk to the neck of the bottle, due to the action of the water upon the cork or upon the binder of composition cork, and also serves to more or less effectively seal the raw edges of the paper of the center disk, and prevent possibility of the softening of the paper and its ultimate disintegration as a result of a slow absorption of moisture through such raw edges.

A cap embodying the invention lends itself to rapid production methods, which will now be described.

Preparatory to the application of the center disk d to the cushion disk c, the latter is completely assembled in relation to the shell a. The caps, completely assembled, may be rapidly fed in relation to cutting dies g and h, and as they are brought under these dies, superimposed strips a' of paper, and a' of gutta percha tissue are fed between the die plate h and the punch g.

With the descent of the punch *g*, disks are simultaneously cut from the strip *d'* and *g'*, such disks being pressed by the punch upon the disk *d* with their centers concentric with each other and with said disk *d*. The punch *g* is maintained at an elevated temperature required to melt the gutta-percha of the strip *g'* and make it tacky, so that substantially simultaneously with the pressing of the disks *d* and *g* against the disk *d*, the disks *d* and *g* will be bonded together with sufficient permanency to ensure accurate positioning of the disk *g* and avoid likelihood of displacement of same thereafter. It is preferable, after the disk *g* has thus been bonded to the disk *d*, to thereafter subject them to continuing heat and pressure for a sufficient interval to ensure the complete fusion of the gutta-percha and a close adhesion of every portion of the disk *g* to the disk *d*.

For this purpose I have shown a carrier *i* and a heated spring pressed plunger *j*.

In the drawings, I have shown the punch *g* and the plunger *j* as being heated by gas jets, but this is immaterial to the invention and other heating means may be employed.

It will be noted that by following the methods above specified, the heat necessary for the fusing of the gutta-percha is applied at the surface of the disk *d*, and that the time intervals are sufficiently short to avoid any substantial absorption of heat by the cushion disk *g*. The very thin gutta-percha tissue will melt very rapidly, and after the removal of the punch *g* or plunger *j* will solidify with great rapidity and form a substantially imperceptible stratum intermediate the disks *g* and *d*.

4.7.8

If it is desired to provide the cap with a superficial wax surfacing throughout the area of the cushion disk *g* and center disk *d*, a very small quantity of wax, such as paraffin or ^{Cerresin} wax or wax compounds, may be delivered upon said disks within the shell *a* following the application of the disk *d* to the disk *g*, and prior to the application of heat and pressure through the medium of the carrier *i* and plunger *j*. Such heat and pressure will spread a drop of wax in a very thin film about the entire exposed face of the two disks, the raw edge of the disk *d* also being coated with this wax.

This thickness of the disk *d* will be approximately five-thousandths of an inch, while the thickness of the binding stratum *g*, in the ultimate product, will be relatively less than the thickness of the gutta-percha tissue, or a mere fraction of a thousandth of an inch. The wax surface stratum will also be but a mere fraction of a thousandth of an inch, and is not perceptible to the eye, although sensible to the touch.

The glazed face of the disk *d* does not require a wax surfacing, and, so far as I have been able to determine, most of the wax is expressed from this surface and forced from the disk to the exposed area of the cushion disk *g*.

If it is desired to provide the cap with a wax surface as described, it is essential that this surface be applied after the center disk *d* has been assembled in the cap, since the presence of wax upon the surface of the cushion disk *g*, prior to the application of the disk *d*, would prevent a proper bonding of this disk *d* to the cushion disk *g*.

The glazed surface upon the strip *d'* consists of

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a waterproof compound consisting of resin, China wood oil and a drier, and containing a plasticizer.

which has a high-gloss or water-finish
express paper, sulphite paper and bleached Kraft

paper are all well known commercial products.

This application is a division of my co-pending application, Serial No. 360,895, filed May 5, 1929.

It is not my invention to limit the invention to

the precise details herein described, it being apparent

that such may be varied without departing from the spirit

and scope of the invention.

I claim:

Q

*8903
6 claims*

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I CLAIM:

1. The method of making the herein described bottle cap, including the steps of simultaneously cutting disks from superimposed strips of fibrous material, and insoluble, fusible cementitious material, depositing said disks upon a cushion disk positioned within a metallic shell, and applying heat sufficient to fuse said cementitious material while subjecting said disk to pressure.

2. The method of making the herein described bottle cap, including the steps of simultaneously cutting disks from superimposed strips of fibrous material, and insoluble, fusible cementitious material, depositing said disks upon a cushion disk positioned within a metallic shell, applying heat sufficient to fuse said cementitious material while subjecting said disk to pressure, and thereafter subjecting said disk to a continuing heat and pressure.

3. The method of making the herein described bottle cap, including the steps of simultaneously cutting disks from superimposed strips of fibrous material, and insoluble, fusible cementitious material, depositing said disks upon a cushion disk positioned within a metallic shell, applying heat sufficient to fuse said cementitious material while subjecting said disk to pressure, delivering a small quantity of wax upon said disks, and thereafter subjecting said disk to a continuing heat and pressure.

4. The method of making the herein described bottle cap, including the steps of simultaneously cutting disks from superimposed strips of fibrous material, and gutta-percha tissue, depositing said disks upon a cushion disk positioned within a metallic shell, and applying heat sufficient to fuse said gutta-percha tissue while subjecting said disk to pressure.

5. The method of making the herein described bottle cap, including the steps of simultaneously cutting disks from superimposed strips of fibrous material, and gutta-percha tissue, depositing said disks upon a cushion disk positioned within a metallic shell, applying heat sufficient to fuse said gutta-percha tissue while subjecting said disk to pressure, and thereafter subjecting said disk to a continuing heat and pressure.

6. The method of making the herein described bottle cap, including the steps of simultaneously cutting disks from superimposed strips of fibrous material, and gutta percha tissue, depositing said disks upon a cushion disk positioned within a metallic shell, applying heat sufficient to fuse said gutta-percha tissue while subjecting said disk to pressure, delivering a small quantity of wax upon said disks, and thereafter subjecting said disk to a continuing heat and pressure.

(1)

7. The improved method in the manufacture of bottle caps of the type comprising an interior disk of cushion material which consists in positioning upon said disk a facing comprising high gloss or express paper having its outer exposed surface coated with varnish, and adhesively uniting said facing to the disk through the medium of a stratum of gutta-percha by applying to the varnished surfacing of the facing both pressure and heat sufficient to soften the gutta-percha and cause the paper to adhere to the disk, and then permitting the gutta-percha to harden.

8. The improved method in the manufacture of bottle caps of the type comprising an interior disk facing of cushion material which consists in positioning upon said disk a facing spot of smaller diameter than the disk and comprising high gloss or express paper having its outer exposed surface coated with varnish and adhesively uniting said facing to the disk through the medium of a stratum of gutta-percha by applying to the varnished surfacing of the facing spot pressure and heat sufficient to soften the gutta percha and cause the paper to adhere to the disk, and then permitting the gutta-percha to harden.

2/18

(1)
9. The improved method in the manufacture of bottle caps of the type having an interior facing of cushion material which consists in applying to the cushion material a facing disk of high gloss or express paper having an exposed surface of varnish by feeding beneath a plunger a strip of the paper with its varnished surface facing the plunger, positioning a cap at the other side of the strip, there being a stratum of gutta-percha between the cap and paper, operating the plunger to cut a facing disk from the paper strip and to press the disk and the gutta-percha upon the cap, and simultaneously applying heat sufficient to soften the gutta-percha and cause the paper to adhere to the cap and then permitting the gutta-percha to harden.

10. The improved method in the manufacture of bottle caps of the type having an interior facing of cushion material which consists in applying to the cushion material a facing disk of high gloss or express paper in the form of a centrally disposed spot of substantially smaller diameter than the cap and having an exposed surface of varnish by feeding beneath a plunger a strip of the paper with its varnished surface facing the plunger, positioning the cap at the other side of the strip, there being a stratum of gutta percha between the cap and paper, operating the plunger to cut a facing disk from the paper strip and to press the disk and the gutta-percha upon the cap, and simultaneously applying heat sufficient to soften the gutta-percha and cause the paper to adhere to the cap and then permitting the gutta-percha to harden.

add R'
per 2

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In testimony whereof, I have hereunto set my hand

Albin H. Warth
(Write first name in full.)

Oath

~~CITY OF BALTIMORE~~ CITY OF BALTIMORE

State of MARYLAND

ALBIN H. WARTH,

the above-named petitioner, being duly sworn, depose and say that he is a citizen of the United States, and resident of the City of Baltimore, and State of Maryland,

and that he verily believes himself to be the original, first, and sole inventor of the improvement in

BOTTLE CAP AND METHOD OF MANUFACTURING SAME,

described and claimed in the annexed specification; that he do not know and do not believe that the same was ever known or used before his

invention or discovery thereof; or patented or described in any printed publication in any country before his

invention or discovery thereof or more than two years prior to this application; or in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by him or his legal representatives or assigns more than twelve months prior to this application, and that no application for patent on said improvement has been filed by him or his representatives or assigns in any foreign country.

Albin H. Warth
(Write first name in full.)

Sworn to and subscribed before me, this 20th day of October 1930.

[SEAL]

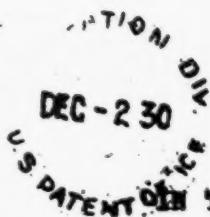
James H. Dickerson
Notary Public.

MY COMMISSION EXPIRES MAY 4, 1931

Acknowledgment should be made before a Notary Public, WHO MUST AFFIX HIS SEAL. If Notary has no seal, a certificate of the Judge or Clerk of the Court showing that the Notary is qualified, must be attached. If the oath is taken before a Justice of the Peace, a certificate of the Judge or Clerk of the Court showing that such Justice is qualified, must be attached.

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*Ed
Belm And a*

U.S. PATENT OFFICE

Albin H. Warth,

BOTTLE CAP & METHOD OF
MANUFACTURING SAME,

Filed Oct. 31, 1930,

Serial No. 492,546.

Div 14

December 2, 1930

Hon. Commissioner of Patents,

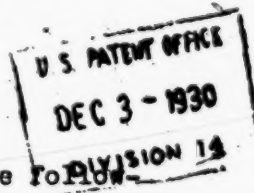
Washington, D. C.

Sir:

We hereby authorize and request entry of the following amendment in the above entitled application.

IN THE CLAIMS

Add the following:



Th M.
(1)
a

--11. A bottle cap embodying therein a metallic shell, a cushion disk within said shell, a facing disk of water repellant, gas impervious fibrous material, of smaller diameter than, and concentric with, said cushion disk, and a thin stratum of an insoluble, fusible, cementitious material co-extensive in area with said facing disk, between said facing disk and said cushion disk.

12. A bottle cap embodying therein a metallic shell, a cushion disk within said shell, a facing disk of water repellant, gas impervious fibrous material of smaller diameter than, and concentric with, said cushion disk, having a glazed surface exposed inwardly of the shell, and a thin stratum of an insoluble, fusible, cementitious material co-extensive in area with said facing disk, between said facing disk and said cushion disk.

(II)

13. A bottle cap embodying therein a metallic shell, a cushion disk within said shell, a facing disk of water repellant, gas impervious fibrous material of smaller diameter than, and concentric with, said cushion disk, and a thin stratum of an insoluble, fusible, cementitious material co-extensive in area with said facing disk, between said facing disk and said cushion disk, and a thin film of wax upon the exposed surface of said cushion disk and about the edge of said facing disk.

a

14. A bottle cap embodying therein a metallic shell, a cushion disk within said shell, a facing disk of water repellant, gas impervious fibrous material of smaller diameter than, and concentric with, said cushion disk, and a thin stratum of gutta percha co-extensive in area with said facing disk, between said facing disk and said cushion disk.

15. A bottle cap embodying therein a metallic shell, a cushion disk within said shell, a facing disk of water repellant, gas impervious fibrous material of smaller diameter than, and concentric with, said cushion disk, having a glazed surface exposed inwardly of the shell, and a thin stratum of gutta percha co-extensive in area with said facing disk, between said facing disk and said cushion disk.

(I) 16. A bottle cap embodying therein a metallic shell, a cushion disk within said shell, a facing disk of water repellant, gas impervious fibrous material of smaller diameter than, and concentric with, said cushion disk, a thin stratum of gutta percha co-extensive in area with said facing disk, between said facing disk and said cushion disk, and a thin film of wax upon the exposed surface of said cushion disk and about the edge of said facing disk.

Q' 17. A bottle cap comprising a metallic shell, a liner of cushion material within the shell and a facing disk comprising paper having an exposed surface of varnish co-extensive with the paper, and an undersurface of gutta percha adhesively uniting the paper to the cushion material, said facing disk being of smaller diameter than and substantially centered upon the cushion material.

for B 18. A bottle cap comprising a metallic shell, a liner of cushion material within the shell and a facing disk comprising paper having an exposed surface of ~~insoluble~~ varnish co-extensive with the paper, and an undersurface of gutta percha adhesively uniting the paper to the cushion material, ~~said facing disk being of smaller diameter than~~ and substantially centered upon the cushion material.

Insert D³

REMARKS

It is requested that the foregoing claims be considered on the first official examination of this case. The method claims defined can only result in the article specified in the additional claims, and, therefore, it is thought that both groups of claims may be properly presented in the same case.

Respectfully,

Adams & Sons
Attorneys.

JJD:U

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Div. 14 Room 102 Annex

Address only
The Commissioner of Patents,
Washington, D. C.
and not any other office

DEPARTMENT OF COMMERCE

UNITED STATES PATENT OFFICE

WASHINGTON

P/MC

Paper No. 3

MAILED

MAY 19 1931

Please find below a communication from the EXAMINER in
charge of this application.

Thomas E. Robertson
Commissioner of Patents

MAY 19 1931

OFF 11-2022

Applicant: Albin H. Warth

Cushman, Bryant & Darby
Loan & Trust Bldg.
Washington, D. C.

Ser. No. 492,546
Filed Oct. 31, 1930
For Bottle Cap and Method
of Manufacturing Same.

This case has been examined and the following art is
cited:

Alberti	1,234,109	July 24, 1917	113-80
Alberti	1,401,300	Dec. 27, 1921	" "
Taliaferro	1,488,937	Mar. 18, 1924	" "
Hothersall	1,540,009	June 2, 1925	" "
Marsa	1,603,788	Oct. 19, 1926	" "
Warth	1,788,280	Jan. 8, 1931	" "
Alberti	1,234,711	July 31, 1917	215-39
Warth	1,856,314	Jan. 17, 1928	" "

This application is found to contain claims to two separate and independent inventions, claims 1 to 10, inclusive, being directed to alleged improvements in a method of making bottle caps, classifiable in Class 113-80 in Division 14, and claims 11 to 18, inclusive, directed to alleged improvements in a bottle cap as an article of manufacture, classifiable in Class 215-39. Each of the above groups have attained a distinct status in the arts, recognized as such by manufacturers and inventors as shown by the above cited patents. Division is accordingly required.

Action on the merits is deferred pending compliance with the above requirement for division. The above cited patents show the state of the art after a cursory examination.

Ross

N. J. Brewster

Examiner.

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IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

BOTTLE CAP & METHOD
OF MANUFACTURING SAME,

Filed October 31, 1930,

Serial No. 492,546.

U. S. PATENT OFFICE

JUN 5 - 1931

DIVISION 14

Div. 14.

* * *

June 4, 1931

Hon. Commissioner of Patents,

Washington, D. C.

Sir:

We hereby authorize and request entry of the following amendments in the above entitled application.

IN THE CLAIMS

Claim 18

Line 3 cancel "insoluble".

Line 4 change the comma to a "period" and cancel the remainder of the claim.

REMARKS

The requirement for division between claims 1 to 10 inclusive and claims 11 to 18 inclusive, is respectfully presented for reconsideration. While it is true, as the Examiner suggests, a field of search must cover a number of different classes, such a distinct field has not, heretofore, been regarded as a basis for requiring division between method and article claims. For example, the Examiner's attention is called to the patent to Warth, No. 1,732,958, granted Oct. 22, 1929, copy of which is attached hereto. Claims 1 and 2 of this patent cover an

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article, and claims 3 to 5 cover the method of making this article. This patent is merely an example of a number of patents which have been granted, and is selected merely because it is a recent patent and, therefore, illustrates the present practice. The Examiner will find other patents in the art claiming both method and article. Moreover, the Examiner will observe that the method and article are very closely related and probably should not be covered in separate patents. For these reasons, therefore, it is thought that the requirement for division should be withdrawn.

✓ If, however, the Examiner is authorized to make final the requirement for division, he is requested to accord an action upon the merits of claims 11 to 18 inclusive.

The remaining claims will be retained for consideration as to the propriety of the requirement for division should an appeal be necessary.

It is requested that the Examiner bear in mind that this application presents a development which is of great practical value. Millions of caps have been manufactured in accordance with the method and article described by the assignee of this application which is the world's largest manufacture of crown caps. The development is a very substantial one, and its practical value has been amply demonstrated.

The claims presented distinguish clearly from the Warth patents 1,656,614 and 1,788,260, of record. Neither patent discloses an article of manufacture of the nature defined. Furthermore, in so far as the application claims an article, it is a continuation in part of applicant's

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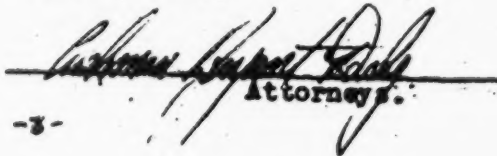
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patent 1,788,260. The method claims are specifically distinguished from this patent.

The other references do not disclose the combination claimed or the method, and it is believed upon consideration of the merits of the claims, they will be found to be allowable.

In view of the prompt response to the action, and applicant's indicated willingness to comply with the requirement for division, if made final, it is thought that immediate action upon the merits of the claims is in order.

Respectfully,


Attorneys.

JJD:U

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Rev. 14 Room 102 Annex

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Washington, D. C."
and not any official by name

DEPARTMENT OF COMMERCE
UNITED STATES PAT. IT OFFICE
WASHINGTON

R/NO

Page No. 5

JUN 13 1931

June 13, 1931

Please find below a communication from the EXAMINER in
charge of this application.

Thomas E. Robertson
Commissioner of Patents

Applicant: Albin H. Warth

Cushman, Bryant & Darby
Loen & Trust Bldg.
Washington, D. C.

Ser. No. 493,548
Filed Oct. 31, 1930
For Bottle Cap and
Method of Manufacturing
Same.

Responsive to amendment filed June 5, 1931.

This application has been submitted to the Examiner of
Classification and the following is his decision:

"Election between (I) Claims 1-10 and
(II) Claims 11-18 is approved.

"The inventions are distinct and are
separately classified. The article could
be made by other processes."

The requirement for division is repeated and hereby
made final.

R

N. J. Brownbaugh

Examiner.

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JUN 18 31

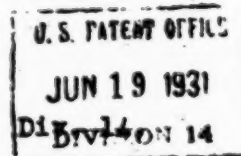
IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

BOTTLE CAP AND METHOD
OF MANUFACTURING SAME,

Filed October 31, 1930,

Serial No. 492,546.



June 17, 1931.

Hon. Commissioner of Patents,
Washington, D. C.

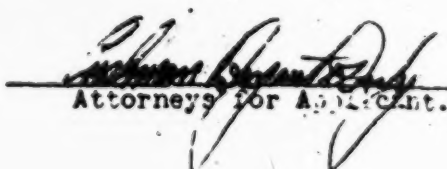
Sir:

Replying to the Official Action of June 13th, the Examiner's attention is directed to the last amendment in which applicant requested an action on the merits of the article claims, 11 to 18, in the event the requirement for division is made final.

Accordingly, applicant repeats this request and asks that in view of the prompt response, an immediate action upon the merits be accorded.

The method claims are retained for purposes of appeal, in the event that an appeal is necessary.

Respectfully,


Attorneys for Applicant.

JJD:M

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Div. 40

Room

264-ANBXY

Address only
 "The Commissioner of Patents,
 Washington, D. C."
 and not any official by name

GOF/H

DEPARTMENT OF COMMERCE
 UNITED STATES PATENT OFFICE
 WASHINGTON

Paper No. 7

All communications respecting this
 application should give the serial number,
 date of filing, and name of
 the applicant

July 13, 1931.

MAILED

JUL 13 1931

Please find below a communication from the EXAMINER in
 charge of this application.

James E. Robertson
 Commissioner of Patents.

Applicant: A.H. Warth,

Cushman, Bryant & Darby,
 Loan & Tr. Bldg.,
 Wash., D.C.

Ser. No. 492,546,
 Filed Oct. 31, 1930,
 For BOTTLE CAP AND METHOD
 OF MANUFACTURING SAME.

Responsive to letter filed June 18, 1931.

REFERENCES ADDED:

4	Abbott	521,752	June 19, 1899	215-39
69	Alberti	1,199,026	Sept. 19, 1916	"
73	Stahl	1,215,737	Feb. 13, 1917	"
X22	Koch	1,238,156	Aug. 28, 1917	"
X21	Mo Manus	1,444,514	Feb. 6, 1923	"
X34	Lange	1,758,610	May 13, 1930	"

Claims 11, 12, 14, 15, 17 and 18 are rejected as being unpatentable over Alberti in view of Lange. It is old to provide cork inserts of bottle caps with facing disks, as illustrated by Alberti. Applicant makes such a disk of paper having its exposed face covered with varnish, and being united to the cushion disk by means of a layer of gutta percha. This material is fully and completely disclosed in Lange. To make the facing disk of Alberti of the material of Lange would not involve invention.

Claims 13 and 16 further call for a thin film of wax on the exposed surface of the disk. It is old to coat such disks with wax as shown by the patents to Abbott and Mo Manus. Claims 13 and 16 are therefore rejected on Alberti in view of Lange and Abbott or Mo Manus.

No action is given on the method claims 1-10, inclusive, which were elected against but retained for purposes of appeal.

J.E.R.

E. L. Smith
 ACTING EXAMINER.

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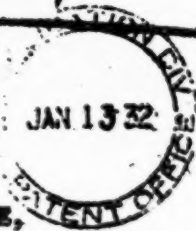
215-R

Applicant: A. H. Warth,

Invention: BOTTLE CAP & METHOD
OF MANUFACTURING SAME,

Filed: Oct. 31, 1930.

Ser. No. 492,546.



U. S. PATENT OFFICE

JAN 14 1932

3W 40 PAPER No

8

HON. COMMISSIONER OF PATENTS,

SIR:

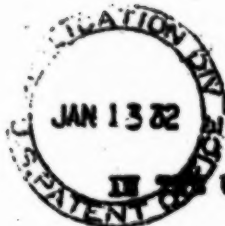
We hereby substitute as attorneys in the above named case, Messrs.
Cushman, Bryant, Darby & Cushman, a firm composed of Arion V. Cushman,
Arthur L. Bryant, John J. Darby and William M. Cushman (Reg. No. 7196),
American Security Building, Washington, D. C.

Respectfully,

Cushman Bryant Darby

January 13, 1932

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U. S. PATENT OFFICE

JAN 14 1932

DIV. 40 PAPER No. 9

IN THE UNITED STATES PATENT OFFICE

C

A. H. Warth,

BOTTLE CAP & METHOD
OF MANUFACTURING SAME,

Filed Oct. 31, 1930,

Serial No. 492,546.

Div. 40.

January 13, 1932

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

We hereby authorize and request entry of the following
amendments in the above entitled application.

IN THE SPECIFICATION

Page 13

✓ Line 4 after the paragraph insert the following:

--This application is a division of my co-pending application,
Serial No. 360,895, filed May 5, 1929.--

REMARKS

The Examiner's attention is called to the fact that this ap-
plication is a division of an earlier application, Serial No.
360,895 filed May 5, 1929, and was filed in view of a require-
ment of the Primary Examiner (Div. 56), calling for a separation
of the claims to the cap as an article of manufacture and claims
as to the line or material useful generally in caps.

Since the parent application ante-dates the Lange patent
1,738,610, an affidavit under Rule 75 is unnecessary, and the
Lange patent is not available as a reference.

No. The
first action
by Div. 56
was on Nov. 24, 1930

It is accordingly submitted that the rejection based upon Alberti, in view of Lange, should be withdrawn, and it is believed that, upon consideration of the following explanation of this invention, the claims will be found allowable.

The present application is assigned to the Crown Cork & Seal Company, Inc., which is the largest manufacturer in the world of crown caps. As the Examiner well knows, these caps are used largely for the sealing of gaseous beverages which contain acids and alkalies; for example, ginger ale and mineral water. A crown cap always includes a disk of cushion material, and this material is either natural cork or a cork composition including ground cork and a binder. It has always been a problem to protect the cushion material from the acid and alkali containing liquid. This is particularly necessary, since many beverages, such as ginger ale, are stored for extended periods running from six months to a year before they are consumed. The contents of these beverages attack the cork, cause the same to deteriorate, and result in imparting an objectionable taste to the beverage and frequently discolor the latter. About 1918, the industry turned to the application of a metal foil center spot. This spot was applied to the cushion disk and was used for many years, particularly in crown caps employed for sealing beer and mineral water. But foil does not resist the attacks of alkalies or of many acids, and never proved satisfactory.

After an extended period of test, running over many years, the applicant, who has for fifteen years been chief chemist of the Crown Cork & Seal Company, Inc., developed the cap of the present invention.

When first introduced to the market, it was not favorably received, since it was not believed that a paper spot cap would

be unsatisfactory. The trade knew of previous tests of paper faced caps carried on by the applicant and which were unsatisfactory.

✓ It was only over determined resistance, particularly by the bottlers of ginger ale, that the present cap was established as a standard commodity. Over one hundred million caps made in accordance with the disclosure of this application have been used. It is now the standard cap for both Canada Dry and Clicquot ginger ale, and is used exclusively by these manufacturers in place of caps previously employed.

In other words, the cap of this invention has entirely supplanted caps previously used, and has been found to overcome the objections to foil spot caps and previously tested paper faced caps.

The success of the present invention is due to the co-action or combination of the gutta percha layer with the varnished paper layer. It is not due to the paper alone, nor is it due to the gutta percha alone. But the applicant discovered that the gutta percha, in combination with the high gloss or resistant paper, such as express paper, particularly when the latter is provided with a varnished coating, produces results not obtainable with any other facing material and which are not obtainable except with an adhesive layer of the character of gutta percha. It has been found that the gutta percha is not only an adhesive, but it provides an acid resistant backing for the paper which is, per se, elastic. As a result of the elastic character of this adhesive, the paper does not tend to tear, and because of its acid and liquid resistant character even though the paper becomes permeated which to some extent is inevitable, this particular adhesive resists the action of the permeating liquid and maintains the protective action of the laminated spot.

This invention represents probably the most important con-

tribution, from a practical standpoint, which the crown cap industry has received in the last seven years.

If the Examiner desires affidavits as to the facts above explained by counsel, the same will be furnished, but it is thought that affidavits will not be required, since many of the facts explained are known to the Examiner.

While the Alberti and McManus patents disclose the use of a spot and the McManus patent mentions paper, the Examiner is requested to bear in mind that while these references may disclose the broad or general idea, the use of the paper spot was not found practicable prior to this invention, and a cap of this character did not come into use until the applicant made the present invention. In other words, it was applicant's present disclosure which constituted the last and necessary step to make the invention commercially useful, and it is on that step that invention is predicated. Such a contribution to the art fully responds to the tests of invention which have been generally applied, and answers particularly the requirements laid down by the Circuit Court of Appeals for the Second Circuit in International Cork Co., v. New Process Cork Co., 8 F. (2d) 420. In that case, the court considered the Alberti patent upon the use of a heat coagulating adhesive. The use of such an adhesive was broadly old, but it had never been applied for the particular purpose and in the particular relation claimed. The court speaking through Judge Manton said (at 425):

"The great volume of work and experimentation that was indulged in by men who were interested in this art, all laboring to meet this necessity, indicates the importance of the new idea which has resulted in the patents in suit. To the art it seems a forward step, and has succeeded in bringing about economy in manufacture, speed in production, and a cheaper product - cheaper because of the ability to manufacture faster. The

outstanding fact is that in all this experimentation of trained men, with some knowledge of egg or blood albumen, no one thought of its use as Alberti made use of it in the patents in suit. It is more than a mere substitution for a new use. Such a substitution, if it was one, was not evident to these experienced men."

This language applies very forcefully to the present case. Although McManus and Alberti disclose the use of paper spots and refer to the employment of paper, neither patent suggests the combination of the paper and the adhesive backing in the form of an insoluble infusible cementitious material. Nor do they suggest the combination of the varnished paper with an adhesive which more specifically is defined as gutta percha (claims 14, 15, 16, 17 and 18). This combination is not only new, but it produces novel results. The gutta percha constitutes a double barrier which is not provided by any other adhesive. Together with the paper, it provides an elastic or resilient facing which avoids liability of tearing of the paper under the high pressures to which the spot is subjected. Moreover, because of its resistance to acids, the gutta percha backs up the high gloss and inherently resistant paper, and constitutes a secondary line or plane of protection for the cushion material. In conclusion, it is submitted that since the references do not disclose the combination defined and since this combination has supplanted devices of the character shown in the references and constitutes the last and final step which made practical the vague suggestions of the prior art, it is clearly entitled to the protection of the character provided by the claims of record.

Respectfully,

Lucas J. ...
Attorneys.

DFD:ps

Div. 62 Room 7525



Paper No. 10

Address only
"The Commissioner of Patents,
Washington, D. C."
and not any official by name

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
WASHINGTON

All communications respecting this
application should give the serial number,
date of filing, and name of
the applicant

Please find below a communication from the EXAMINER in June 21, 1932
charge of this application.

Thomas E. Robertson
Commissioner of Patents.

Applicant: Albin H. Warth

Cushman, Bryant, et al,
American Security Bldg.,
City.

Ser. No. 492546
Filed Oct. 31, 1930
For Bottle cap and
method of manufacturing same

MAILED
JUN 21 1932

Responsive to amendment filed Jan. 13, 1932.

Added reference:

McManus	1,339,066	May 4, 1920	225-39	(848)
Smith et al	983,319	Feb. 7, 1911	215-39	(12)
Weissenthanner	24,946	Jan. 15, 1914	215-39	Br. 1 sht (12)

Claim 11 is rejected on the McManus 1,339,066, patent
by which it is fully met.

Claim 12 is rejected as being unpatentable over the
McManus 1,339,066, patent. No invention can be predicated on the
use of a high glass paper since the use of such paper is of common
experience in the art.

Claims 13 and 16 are rejected on the McManus 1339066
patent in view of the patent to Weissenthanner. To wax the exposed
surface of McManus' spot and cushion and to use gutta-percha as an
adhesive would not amount to invention since Weissenthanner shows
an organization that could be applied to McManus' device by one
skilled in the art.

Claims 14 and 15 are rejected on the McManus 1339066 pat-
ent in view of the patent to Weissenthanner. No invention can be
seen in substituting gutta-percha for the adhesive used by McManus.
The use of glazed paper, recited in Claim 15 gives no patentability
to the claim for the reason pointed out above.

Claims 17 and 18 are rejected on the Smith et al patent
in view of the patent to Weissenthanner. No invention resides in the
substitution of gutta-percha for the adhesive used by Smith.

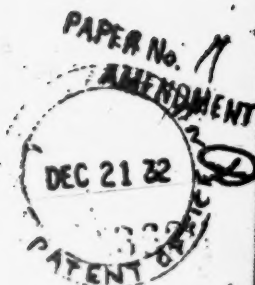
W. W. Cochran
Examiner.

8.7.8.

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983

1877



IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

BOTTLE CAP & METHOD OF
MANUFACTURING SAME,

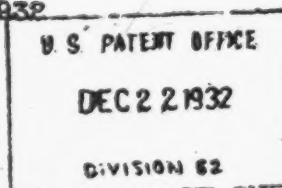
Filed October 31, 1930,

Serial No. 492,546.

Div. 62.

December 21, 1932

Hon. Commissioner of Patents,
Washington, D. C.



Sir:

In response to the Official action of June 21, 1932, kindly
amend the above entitled application as follows:

IN THE SPECIFICATION

Page 2

Line 11 before "disk" insert --center--.

Page 4

Line 2 before "insoluble" insert --water--.

Line 7 after the period insert the following: A
medium which is itself elastic or resilient, such as gutta percha,
is preferred, since the same will provide an elastic cushion for
the fibrous disk and thereby minimize the danger of rupturing
the latter. 4

Page 5

Line 21 cancel "of" and substitute --, such as a rela-
tively hard, high-gloss or water-finish paper provided with a
coating of resistant varnish, said disk being of--.

Line 23 cancel "an" and insert --a water--.

Same line (23) after "material" insert --, such as
gutta percha--.

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PAGE

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PAGE

> Page 8

Line 9 after "tin" and before the comma insert --or
aluminum--.

> Line 20 after the paragraph insert the following:

// Aside from the expense of caps provided with foil spots, their use has been extremely limited, due to the fact that foil is not sufficiently resistant to acids and alkalies.

I am aware that it has heretofore been proposed to provide a cap with a center spot of paper, and that this is broadly covered in the United States patent to McManus, No. 1,339,066, granted May 4, 1920. The present invention constitutes an improvement upon the subject matter of said patent.

2
The use of center spots of paper on a commercial scale has not heretofore been economically practicable for several reasons. First, paper has a tendency to absorb liquids and gases and to impart a taste to and discolor many beverages. Moreover, upon absorption of moisture, the paper tends to rupture and expose the cushion material which it overlies. Again, the difficulty of applying a center spot of paper to the cushion disk presents problems altogether different from the use of a facing disk coextensive with the cushion disk, as for example the facing disclosed in my patent No. 1,656,814, granted June 17, 1928. A facing which completely covers the cushion disk may be readily united adhesively to the sheet or blank from which the cushion disk is stamped, or in other words, the facing sheet and cushion sheet are united adhesively, and the laminated disks punched therefrom. But in applying a formed center spot, as distinguished from a sheet, due to the fact that it is necessary to absorb the moisture in the adhesive, and as heretofore explained, during the period of moisture evaporation the spot tends to become displaced. This has presented a problem in large scale production, which manufacturers have not heretofore overcome.

Furthermore, due to the moisture and gas absorbent properties of paper, the exposed edge of the paper spot is of an area which cannot be protected by a facing, such as foil or varnish, since the spot is punched from sheets. This objection I have overcome by using a combination consisting of paper of the character described and a liquid and gas resistant fusible adhesive.

I have found that by using a paper of the character herein described, namely, a tough paper having a hard or high-gloss finish, for example, such as is termed a water-finish, the same will not fracture, has an inherent resistance to liquids and gases and serves as an excellent carrier for an exposed or outer facing of varnish and for a backing layer of water-insoluble, heat-fusible and acid and gas-resistant adhesive. I prefer an adhesive having these characteristics and which is also elastic so as to provide an elastic or cushion backing for the varnish layer and the rupturable paper layer.

(D²) Extensive commercial use of this new cap has established that it is resistant to acids and alkalies and, therefore, useful in connection with liquids with which a foil spot cannot be employed, and that it is at the same time substantially less expensive than a foil spot cap. Moreover, it does not present the mechanical difficulties which are present in applying a foil center spot. The hard, tough paper serves as an excellent carrier for the varnish film as well as for the gutta percha and insures coextensive varnish and gutta percha films. The gutta percha serves not only as a medium for uniting the paper and varnish films to the cushion layer, but constitutes an acid and gas-resistant, water-insoluble, backing layer, thereby preventing moisture, acids or gases which penetrate the varnish film or paper from ~~attaching~~ ^{attaching} the cushion layer. Moreover, the use of a hard paper having a water-finish or high-gloss permits the use

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copy 20
 of even films of varnish and gutta percha, since the paper does not absorb either the fused gutta percha or the varnish to any appreciable extent. Consequently, it is unnecessary to employ more varnish or thicker gutta percha than is required to cover completely the surfaces of the paper.--

7 Line 24 cancel "water-leaf finish" and substitute --water-finish, i. e., high-gloss finish,--.

Page 13

7 Line 3 after "paper" (first occurrence" and before the comma insert --which has a high-gloss or water-finish--.

7 IN THE CLAIMS

7 Cancel the claims and substitute:

1 ~~100~~ A bottle closure comprising a metallic shell, a cushion disk in said shell, a facing disk of hard paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of heat-fusible, acid-resistant and water insoluble adhesive material coextensive in area with the facing disk between the latter and the cushion disk and uniting the two disks.

2 ~~100~~ A bottle closure comprising a metallic shell, a cushion disk in said shell, a facing disk of hard, high gloss paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of heat-fusible, acid resistant and water insoluble adhesive material coextensive in area with the facing disk between the latter and the cushion disk and uniting the two disks.

³
21. A bottle closure comprising a metallic shell, a cushion disk in said shell, a facing disk of hard paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of gutta percha coextensive in area with the facing disk between the latter and the cushion disk and adhesively uniting the two disks.

⁴
22. A bottle closure comprising a metallic shell, a cushion disk in said shell, a facing disk of hard, high-gloss paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of gutta percha coextensive in area with the facing disk between the latter and the cushion disk and adhesively uniting the two disks.

(93)
⁵
23. A bottle closure comprising a metallic shell, a cushion disk facing said shell, a facing disk of express paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of gutta percha coextensive in area with the facing disk between the latter and the cushion disk and uniting the two disks.

⁶
24. A bottle closure comprising a metallic shell, a cushion disk facing said shell, a facing disk of water-finish bleached kraft paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of gutta percha coextensive in area with the facing disk between the latter and the cushion disk and uniting the two disks. H

REMARKS

This application, as amended, is presented for consideration, and in addition to the patents of record, applicant's attorneys desire to place of record the following patents:

	1,656,614, Warth,	Jan.	27, 1928,
	1,339,066, McManus,	May	4, 1920,
	603,108, Lindemeyr,	April	26, 1898,
	849,960, Batchelder	April	9, 1907,
French	463,971, Montaner & Co.	of	1914,
French	415,794, American Cord		
	& Seal Co.,	of	1910,
French	413,841, Premier Bottle		
	Seal Co. Ltd.	of	1910,
British	26,297, MacCormick et al.,	of	1909,
British	16,075, Demuth	of	1914.

In order that the Examiner may have before him a complete statement by one who has been actually engaged in the development of the art, we are filing herewith the applicant's affidavit, supported by another affidavit having to do with the facts of commercial acceptance of the invention which are referred to in the Warth affidavit.

Applicant has been engaged in development work in the cap art since 1915, and there is probably no one in the United States, or in fact in any country, who has devoted more time to the technical development in connection with the cap industry. It is believed that, in view of the affidavits, little or no comment is required by counsel upon the prior art. Notwithstanding the general reference in a number of prior patents, including the patent to McManus (1,339,066), to the use of a spot and the vague and general disclosures in the numerous foreign patents, the fact remains that no one contributed the final steps necessary to produce a paper spot cap acceptable to the trade and which could be manufactured on a commercial scale economically, until the applicant devoted his energies to this work. And when all is said and done, it is impossible to escape the proposition that even the applicant, although experienced for over ten (10) years in this particular art when he began development work, and

with all the resources and technical assistance of the Crown Cork & Seal Co. available, succeeded in producing the completed article and establishing it on a commercial basis only after a period of three (3) years intensive work. The results of this work speak for themselves. The inadequacy of the aluminum and tin foil center spot caps had been recognized for years. Tin foil spot caps could only be used with waters and alcoholic liquors. They could not be employed to cap materials containing acids or alkalies and salts in more than very dilute solutions. Aluminum spot caps were unfitted for acidulated drinks or alkali and salt containing liquids. The result was that for years users of crown caps had been employing for the capping of acidulated liquids, such as vinegar, cider, ginger ales, vegetable juices and fruit juices, either (a) the very expensive crowns containing natural cork disks, or (b) the somewhat less expensive but more unsatisfactory crowns containing composition disks, i. e., granulated cork and a binder.

The fact that the large users of the composition cork disks turned immediately to the crown of the present invention, although from 20 to 25% more expensive than the composition cork disk, is conclusive evidence that applicant's contribution to the art is indeed an important one. Among manufacturers who paid more for this article and in whose business the invention supplanted the crown containing the composition cork disk, are the Hoffman Beverage Company, of Newark, New Jersey, which has used over 50,000 gross of paper spot crowns per year since 1928, The Moxie Company of America, and the May Bottling Company of Baltimore. Over a score of former users of the cheaper composition cork crown, without a facing, could be mentioned all of whom have turned to exclusive use of the paper spot cap described in this application.

Among the large distributors in the United States in whose business this invention has supplanted the natural cork crown which was from 20 to 25% more expensive to both the bottler and the manufacturer, can be mentioned the Clicquot Club Company and the Canada Dry Ginger Ale Company. Both of these companies have used the cap of this invention almost exclusively since 1929.

And the outstanding fact is that, in every instance, the crown was adopted by these companies practically without solicitation and without advertising or sales pressure of any kind. Each company was simply submitted samples of the invention and permitted to test the same over a period of from four (4) to six (6) months. The result was that the invention was adopted by these companies of their own volition as a contribution to the art superior to anything previously available. And in many instances, e. g., Hoffman and Koxie, the article was purchased at a price substantially higher than the price paid for the crowns previously used.

The fact that applicant's invention has made possible a saving of from 20 to 25% in the cost of manufacturing caps suitable for the bottling of high grade ginger ales, such as Clicquot and Canada Dry, is, of itself, strong evidence of invention, particularly in view of the further fact that the manufacturers have quickly adopted the product. But this is not all. Not only may the product be manufactured at a substantial saving in cost, but it is far superior to the more expensive natural cork disk. It does not impart taste to beverages, such as ginger ale, and, therefore, avoids the loss of large volumes of bottled product as frequently occurred when crown caps with natural cork disks were used. Consequently, manufacturers were willing to pay a premium of from 20 to 25% for the paper spot cap produced by applicant to supplant the composition cork crown.

These are facts which are fully set forth in the accompanying affidavit, and need no discussion by counsel.

PRIOR ART

Of the prior patents of record, it is thought that none is more pertinent than the patent to McManus (1,339,066). The patentee, McManus, is the President of the Crown Cork & Seal Company, Inc., assignee of the present application. Although his patent discloses broadly the use of a center spot of paper and mentions the paper disc as one "made of a hard parchment paper, or of any other paper so treated as to make it non-absorbent", the affidavit of the applicant shows that, notwithstanding this disclosure, there remained a final contribution to be made to this art in order that paper spot caps for the sealing of many beverages or materials with which metal foil spots could not be used remained to be developed. After a period of experimental work extending over several years, applicant accomplished this result and gave the world the product for which the groundwork had been laid by McManus. But the final steps and those which made the product a commercially useful and successful one were those of the applicant.

Admittedly, applicant's invention is an improvement upon the basic development of McManus; but that does not negative invention. There are numerous cases where an inventor utilizing the broad ideas disclosed by an earlier worker in the art has made the device more successful and established the same on a firm commercial basis.

"Devices and publications leading up to, but not fully accomplishing, a desired end, do not anticipate an invention which for the first time effectively meets all requirements and successfully accomplishes such end". Truax v. George F. Childs Adjustable Parlor Chair Co., 152 F. 769 (Ill.).

Furthermore, it is true that the materials of applicant's product are old, per se, but it is undeniable that applicant, by a selection of old elements, has produced a new combination and has accomplished results which heretofore had not been accomplished. The established commercial success of this invention which has been adopted by practically all leading manufacturers in place of both more expensive and less satisfactory articles theretofore available and in place of less expensive and less satisfactory articles, establishes the invention as well entitled to the liberal treatment held proper by the Supreme Court in Eibel Process Company v. Minn. and Ontario Paper Co., in which Chief Justice Taft, speaking for the Court said:

"The fact that in a decade of an eager quest for higher speeds this important chain of circumstances had escaped observation, the fact that no one had applied a remedy for the consequent trouble until Eibel, and the final fact that when he made known his discovery, all adopted his remedy, leave no doubt in our minds that what he saw and did was not obvious, and did involve discovery and invention."

When all is said and done, the following facts remain as undisputed.

1. In the face of the disclosure in the prior art no one had provided a cap which would overcome the defects of the expensive natural cork crown disk which alone was useful, although feebly so, in connection with the bottling of acidulated liquids or the defects of the less satisfactory and somewhat less expensive cork composition disks.
2. The industry had for years prior to this invention recognized the limited field of usefulness and the almost prohibitive expense of the metal foil "center spot" caps.
3. Although applicant had before him the disclosures of the prior art, the development of this invention required a long period of experimental work.
4. There is no reference which discloses the combination of elements defined in the claims, and no reference discloses a cap which could be commercially used either in place of or in competition with the cap of applicant's invention.

5. This invention, when offered to the trade by applicant's assignee, the Crown Cork & Seal Company, was immediately adopted, and it supplanted caps previously used for the same purposes. In this field, it was universally found more satisfactory than the more expensive natural cork caps and it was universally adopted as more satisfactory than the less expensive composition cork crowns previously used.

Under these circumstances, we submit that to this case very aptly applies the language of the Supreme Court in Diamond Rubber Company v. Consolidated Rubber Tire Co., 220 U. S. 428. In that case the Court said:

"Knowledge after the event is always easy, and problems once solved present no difficulties, indeed, may be represented as never having had any, and expert witnesses may be brought forward to show that the new thing which seemed to have eluded the search of the world was always ready at hand and easy to be seen by a rarely skillful attention. But the law has other tests of the invention than subtle conjectures of what might have been seen, and yet was not. It regards a change as evidence of novelty, the acceptance and utility of change as a further evidence, even as demonstration".

The fact that this invention has supplanted the prior art devices makes particularly pertinent the statement of the Court of Appeals in in re Thomson C. D. 1906, p. 566:

"The testimony going to show the practical success of the applicant's combination, the truth of which is substantially conceded, is entitled to material weight. Owing to the very serious difficulties, which appear to have been successfully overcome by the applicant, other electrical train-lighting systems have not gone into general use. The demand for an improved system has been an urgent one for years, and yet no other inventor, or electrical expert, with all the knowledge afforded by prior patents and constructions, has succeeded in devising a system answering this demand. It may be laid down as a general rule, though perhaps not an invariable one, that, if a new combination and arrangement of known elements produced a new and beneficial result never attained before, it is evidence of an invention."

As explained recently during an interview with the Examiner, this amendment is filed in the present case so that applicant's

patent may issue upon subject matter clearly distinct from the subject matter involved in interference. The claims of this application are definitely limited to a cap of the center spot type, whereas the subject matter of the interference and of the Lange patent, with which the parent application (Ser. No. 360,695) is involved, has to do with broadly a liner for a cap consisting of a multiplicity of layers. It is believed that the Examiner is quite clearly of the opinion, as are applicant's attorneys, that the subject matter in interference (60,931) and the subject matter of the new claims, are distinct and patentably different. Certainly the claims distinguish from the subject matter of the Lange patent 1,779,884, granted Oct. 28, 1930, for the same reasons they distinguish from the prior art of record. Moreover, none of the claims is readable upon the Lange patent. Lange does not disclose the use of a high-gloss paper or express paper. He does not disclose the combination of such paper and a gutta percha adhesive layer. He does not recognize the adaptability of this combination for use as a center spot in a cap of the crown type, or in any type of cap. The only basis for interference between the Lange patent and the parent case, as held by the Board of Appeals (Interference 60,931), is claim 2, which is directed to a laminated material having an alcohol resistant varnish film. Very evidently, the subject matter presented is divisible from the subject matter in interference, and there is no reason why applicant should not be given a patent upon the specific subject matter defined in the new claims. The divisibility of the subject matter of the new claims from the subject matter of the claim (2) of the Lange patent, is evident from the fact that the Patent Office, in applicant's parent case, itself required division between claims to a cap and claims to a laminated material. The subject mat-

76-77
P. 1
12-3 P. 2
Lange

the
division
is done

*I not particularly
different. Lange is
a ref. until the
end of the X.*

ter is embodied in different Patent Office classifications and has repeatedly been recognized as patentably distinct for the purpose of division or separate applications. At any rate, it is clear that the Lange patent is not a reference against this application which has a much earlier filing date; the parent application, of which this is a division, was filed May 5, 1929, whereas the application for the Lange patent was not filed until February 5, 1930.

Respectfully,

Richard B. Dwyer & Co.
Attorneys.

JJD:J

Affidavit#
12

IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,
BOTTLE CAPS & METHOD
OF MAKING SAME,

Filed October 31, 1930,

Serial No. 492,546.

CITY OF BALTIMORE)
 : SS.
STATE OF MARYLAND)

Albin H. Warth, being first duly sworn, deposes and
says:

I am the applicant identified in the above entitled
application for patent and am of legal age.

Since approximately 1916, I have been chemical director
in charge of the laboratory of the Crown Cork & Seal Co., Inc.
and its predecessor Crown Cork & Seal Co. of Baltimore City.

Among my duties have been the testing of materials furnish-
ed for the manufacture of crown caps and the development of new
materials for the manufacture of caps as well as the development
of new types of caps and closures.

Since 1924, I have given particular attention to the
development of crown caps of the center spot type. This type
of cap consists of a metal shell having the usual cushion disc
therein, and the cushion disc is faced by a disc of protecting
material united to the cushion disc.

Prior to the development of the invention disclosed in my
above entitled application, crown caps consisted of the follow-
ing types:

1. Caps having a cushion disc of natural cork.
2. Caps having a cushion disc of granulated cork and a binder.
3. Center spot caps, i. e., embodying a composition or natural cork disc provided with a facing disc of smaller diameter than the cork disc.

The invention of the present application relates to the third type of cap. Before the invention of this application, center spots were formed from only two materials, namely (a) tinfoil and (b) aluminum foil. Spots of metal foil, were the only spot caps commercially available. Although the trade generally was desirous of obtaining "center spot" caps for numerous materials, the use of the tin and aluminum spots was very limited. In the first place, such caps were almost prohibitively expensive, and the handling of metal foil presented many mechanical difficulties due to its flimsy and inelastic character. Moreover, the tin spot had a very limited field for use, being not at all resistant to acids or acidulated liquids, and resistant to only very dilute alkalies and salts. The aluminum spot was also limited in its application, being non-resistant to acids, except weak inorganic acids in solutions not in excess of two-tenths of one per cent, and non-resistant to alkalies or salts in any strength, even as low as one-half of one per cent. Moreover, the aluminum spot tended to decolorize the material within the capped vessel, such as the natural pigments of fruits and vegetable juices.

As a result of the limited applicability of the metal foil center spot caps, it was necessary for bottlers and manufacturers generally to use caps of very expensive character, and which contained a cushion disc of natural cork. Caps having natural cork cushion discs before the present invention were from twenty to

twenty-five per cent more expensive than even foil center spot caps. Notwithstanding this additional expense, natural cork discs were very unsatisfactory in connection with many materials, particularly those which are highly carbonated, such as ginger ale. Yet the principal manufacturers or bottlers of high grade products did not have available for beverages, such as ginger ale, or acidulated or alkali containing liquids, any cap more satisfactory than the cap provided with a cushion disc of natural cork. Many bottlers or manufacturers of less prominent brands used for such liquids or beverages, caps having a composition cork disc, i. e. granulated cork and a binder. Such caps were useful where the beverages were used after bottling within a reasonable time, and would retain purity and clarity over relatively short periods such as up to six weeks. These composition cork caps were somewhat less expensive than the center spot caps and were obtainable at from twenty to twenty-five per cent less than the center spot caps.

Generally, therefore, there was available in the trade at the time of the invention of this application for the capping of acidulated, alkali and salt containing liquids, only the natural cork cushion disc caps or the composition cork cushion disc caps. These caps were used, although unsatisfactorily, in connection with fruit juices, vegetable juices, ginger ale and on many acidulated beverages for export purposes, although in the latter, due to the necessity for long holds, only the natural cork discs could be used.

Aside from the expensive character of the natural cork caps, the matter of defective caps due to the difficulty of obtaining sufficiently high grade cork, which became obtainable with greater difficulty as the use of crown caps increased, another very serious objection was the inability to avoid imparting of taste to many beverages. This was due to the tannic acid in the cork and

residues of the bleaching materials employed in preparing the cork. I recall one large customer of the Crown Cork & Seal Co. who in one instance had to destroy several thousand dollars worth of gingerale in Baltimore City because the natural cork discs, although the most expensive and unquestionably the best cap available at the time, imparted such an objectionable taste to the ginger ale that it could not be sold. This expense had to be borne by the Crown Cork & Seal Co. as the manufacturer of the caps. Faced with this situation, I began to develop a center spot cap which could be used in the capping of fruit juices, vegetable juices, cider, vinegar and generally in the capping of acidulated liquids or materials with which the tin and aluminum center spot cap could not be used.

Although crown caps had been manufactured with a paper facing blank before that date, as disclosed for example in my patent 1,656,614, the manufacture of a crown with a paper "center spot" presented many difficulties which the several years of manufacture of an over-all paper facing did not help to solve.

First, although paper of the center spot cap would appear to be less likely to rupture or fracture because it leaves an exposed surrounding area of the cushion material for direct engagement with the container, I found that the danger of rupture of the center was equal to, if not greater than, the danger of rupturing the over-all paper facing disc. This problem of fracture or rupture is one which I had never completely overcome, although the Crown Cork & Seal Co. had for many years manufactured for general use a crown cap having a paper facing completely covering the cushion disc.

Secondly, the center spot of paper presented a free edge of paper which was necessarily uncovered and exposed as dis-

tinguished from the protected edge of the paper facing which completely covered the cushion disc. Extended experiments showed that this exposed edge of the paper absorbed moisture and gases, thereby causing the paper under the high pressure to which it is subjected in the capping operations to rupture; and in many instances, if actual rupture did not take place, the paper became so permeated with gases and moisture as to permit the contents to attack, through the paper, the cushion disc.

Third, in addition to these problems of developing a paper spot which was substantially fracture-proof and impermeable to acids and gases, there was presented the problem of providing a paper spot which would not impart taste to liquids and beverages, particularly of a character in which any foreign taste became immediately objectionable. This is particularly true with respect to ginger ale. There was also the problem of developing, particularly for high pressure beverages or liquids, such as ginger ale, a complete or finished center spot of the proper thickness. Although as before explained, crown caps had been provided with a paper facing completely covering the cushion disc, such use over a period of several years contributed little or nothing to the problem of producing a paper center spot. Papers having a thickness of substantially, .004 had been used in this connection, but were found entirely unsatisfactory for center spots with highly carbonated or high pressure beverages for the reason that it was found the beverages quickly penetrated this paper. On the other hand, I found that papers having a thickness in excess of .007 were too inflexible and would not produce a satisfactory seal, and it was only after extensive experiments that I determined upon a critical thickness for paper spots, of .005 to .0065, particularly when such spots are intended for capping high pressure liquids.

In addition to the foregoing problems which had to do with a cap for general use, it was necessary to arrive at their solution with due consideration to the question of manufacture, since it was necessary to place an article of this nature upon the market within the range of price of caps already available. Obviously, the manufacturing problems which the article presented, had to be solved without a material increase in the manufacturing cost from the standpoint of manufacturing operations. It was found that the final determination of the character of materials to be used in the manufacture of the paper center spot cap had to take into consideration a change in the established manufacturing methods for center spot caps and to which I refer hereinafter.

Although I was aware that earlier patents had referred to the possible use of a center spot of paper, for example the patent to McManus 1,339,066, granted May 4, 1920, the fact is that there remained to be developed, in view of the problems above mentioned, a paper center spot which would overcome the objections above described and there was required, although I had available the entire laboratory and commercial resources of the largest manufacturers of crown caps in the world, a period of research extending over several years, before I was able to produce a crown cap having a center spot generally useful for the capping of materials for which the tin and aluminum center spots could not be used. The cap produced is disclosed in the above identified application. First, I found after testing dozens of papers, that only two were suitable. These two papers were characterized by (a) hardness and (b) a water-finish or high gloss finish. They were express paper, which is a water-finish paper, and bleached kraft paper having a water-finish. I found that these two papers had inherently a natural

1002

resistance to the absorption of moisture and gases. I further found that they formed an excellent carrier for a coating of protecting or resistant varnish which I had applied to the absorbed surface of the paper.

I further found that even these papers, notwithstanding their natural resistance to liquid and moisture, and, therefore, their reduced tendency to rupture, could not be used satisfactorily with an ordinary adhesive for uniting the same to the cushion disc. Previous to my invention, various types of adhesive had been employed in the cap art, for uniting a facing or spot (metal foil) to a cushion disc. The Crown Cork & Seal Co. had used for many years a mixture of Burgundy pitch and other adhesive materials which constituted an adhesive resistant to liquid. But an adhesive merely moisture resistant was not suitable for a center spot cap. In addition to this adhesive, a large number of other adhesives have been used in the crown cap art, but I found none suitable except the one having the characteristics (a) water-insolubility, (b) heat fusibility, and (c) acid resistance. The only adhesive available at the time having these characteristics, I found to be gutta percha, or a mixture of gutta percha and other materials, making the adhesive essentially gutta percha. I discovered that this particular adhesive had another characteristic which made it of extreme value, namely its inherent elasticity which afforded an elastic cushion or backing for the paper. By employing gutta percha, I found that any moisture or gases which tended to permeate the exposed edge of the center disc of paper, notwithstanding the facing of varnish on the paper, or which permeated through the varnish facing, since no varnish is entirely impermeable, prevented the gases or liquid from attacking the cushion disc. As a consequence, the final article used, after approximately three years of experimental work, was a combination of (a) a varnish facing (b) a hard, tough paper having a high gloss or water finish, e.g. express paper or water-finished bleached kraft, and (c) an elastic,

water insoluble and acid resistant adhesive, such as gutta percha.

The final development of this spot which proved to be satisfactory in use, presented a number of problems from the standpoint of economical production on a commercial scale. As will be understood, manufacturing plants had already installed machines for the manufacture of center foil spots, and it was necessary, therefore, that I design my cap so that it might be manufactured with existing machinery. Consequently, the selection of these materials was made with concurrent tests as to the responsiveness of the materials to the machinery. For example, I found that the use of a heat fusible adhesive with a paper facing presented manufacturing difficulties, not presented in the manufacture of a foil center spot cap, due to the marked difference in the heat conductivity of the varnished paper as compared to the foil. Nevertheless, I found that by using a gutta percha film, only of sufficient thickness to provide a complete coating for the paper, and employing paper not in excess of .007 and of the character described, it was possible by slightly increasing the heat application in the machines to apply the paper spots to the cushion discs in the same machines previously used for the manufacture of foil spot caps. This matter of manufacturing operation required a considerable period of experiment, and it was not until 1928 that the problem had been completely solved, and large scale production on a commercial basis could be instituted, although two sales in 1927, primarily for experimentation had been made. The commercial results obtained by the invention are a matter of record in the Crown Cork & Seal Co.

Briefly, they were as follows:-

In 1927, three of the largest manufacturers of ginger ale in the United States, Clicquot Club Co., Canada Dry Ginger Ale Co. and Gosman Ginger Ale Co., were using exclusively crown caps having a cushion disc of natural cork. For these caps the said companies were paying from forty to fifty per cent more than less prominent manufacturers were paying for the only other type of crown then used in connection with ginger-ale, namely, caps having a cushion disc of composition cork. Among the latter were the Hoffman Beverage Co. of Newark, New Jersey, the May Bottling Co. of Baltimore, Maryland, and the Moxie Company of America, of Boston, Massachusetts.

Within a year, or at the most two years, after this invention had been offered to the trade, the users of natural cork discs such as Canada Dry and Clicquot and Gosman, discarded the natural cork disc for the paper spot disc of the present invention and this type of cap has since been used by these companies almost exclusively.

For the new paper center spot cap, these manufacturers paid from two to three per cent less than the natural cork disc and found the center spot cap much more satisfactory. It represented, therefore, a substantial saving both to the bottler and to the manufacturer.

Not only did the former users of natural cork discs turn to the center spot cap, but the same very largely supplanted the composition cork disc, although the paper center spot cap sold to the users of the composition cork disc at a price forty to fifty per cent higher than they had been previously paying for the composition cork disc. For example, in the year 1927,

Crown Cork and Seal Co. sold exclusively to the Hoffman Beverage Co. of Newark, New Jersey, composition cork discs. In 1928, the Hoffman Beverage Co. purchased over fifty thousand gross of paper spot caps, and has continuously used these caps almost exclusively since that date, paying for the same a considerably higher price than they had previously paid for the composition cork cap. The center spot cap supplanted the composition and natural cork caps substantially throughout the ginger ale industry by 1930 and it is now the standard cap for all leading brands of ginger ale.

Furthermore, in the capping of highly carbonated beverages which are also acidulated, the paper center spot cap of this application has almost completely supplanted the plain natural cork or composition cork cap.

Whether substituted for the formerly higher price natural cork cap crown as by Clicquot Club, Canada Dry and Gosman, or for the formerly lower priced composition cork crown, as by Hoffman Beverage Co., Moxie Co. and May Bottling Co. of Baltimore, the paper center spot cap has in every instance been found to be superior to both of the previously used types of crowns.

In the introduction of the paper center spot crown, the Crown Cork and Seal Co. has done virtually no advertising; the article has sold itself. Aside from one or two formal announcements in trade papers that the Crown Cork and Seal Co. was manufacturing paper spot crowns, there has been no advertising of this article. Its adoption by the manufacturers mentioned above, and numerous others, was the result of merely submitting to each manufacturer a few sample caps with the request that they test the same. They were tested by the Clicquot Club Co. and the Canada Dry Ginger Ale Co. over a period of six months

before being adopted and were then ordered without further solicitation on the strength of the tests conducted by these Companies. The same statement applies to the adoption of this article by other large manufacturers of acidulated beverages and of other beverages with which the tin spot and aluminum spot cap could not be used.

Further deponent sayeth not.

Alvin H. Warth

Baltimore, Maryland

December 21st, 1932

Subscribed and sworn to before me, this *21st* day of
December, 1932.

Thomas Bell
Notary Public.

(SEAL)

MY COMMISSION EXPIRES MAY 1, 1933

DEC 22 32

CATION DIV
PATENT IN OFFICE UNITED STATES PATENT OFFICE

Albin H. Warth,

BOTTLE CAPS & METHOD
OF MAKING SAME,

Filed October 31, 1930

Serial No. 492,546.

CITY OF BALTIMORE)
: SS.
STATE OF MARYLAND)

FREDERICK E. FUSTING, being first duly sworn, deposes and says:

That he is Vice-President of the Crown Cork & Seal Company, Inc., having its plant in Baltimore, Maryland, and has been an officer of said company and of its predecessor company, The Crown Cork & Seal Co., of Baltimore City, for over fifteen (15) years.

That he is familiar with the disclosure in the above entitled application which covers the so-called "paper spot" crown first marketed by the Crown Cork & Seal Company, Inc. on a commercial scale in 1928.

That for many years prior to 1925 there had been widely recognized in the crown cap industry a need for a crown cap which would be useful in the bottling of many materials with which "spot crowns" theretofore manufactured could not be employed. Prior to 1925, the only center spot caps available were provided with spots of either tin foil or aluminum foil. These caps could not be employed with acid containing materials, such as fruit juices and ginger ale. For such products it was customary for bottlers to employ crowns having a cushion disc of either (a) natural cork or (b) cork composition material.

The natural cork disc crowns were objectionable because of their very high price and the difficulty in obtaining suit-

able natural cork, particularly for capping high pressure beverages, such as ginger ales. The cork composition disc crowns were even more unsatisfactory.

Prior to 1928, aside from two experimental sales, the Crown Cork & Seal Company had not manufactured a paper spot crown, and to deponent's knowledge no other manufacturer of crown caps had manufactured a cap having a center spot of any material other than foil.

Referring, for example, to the bottlers of ginger ales, such as Canada Dry Ginger Ale and Clicquot Club, these manufacturers prior to 1928 employed crowns having therein discs of natural cork. For these crowns they paid from 26½ to 28½ cents per gross. Yet these crowns, notwithstanding their high price, were not satisfactory. In 1924, the Gosman Ginger Ale Company, of Baltimore, Maryland, met with the loss of a large quantity of bottled ginger ale, due to unsatisfactory crowns of natural cork, and this resulted in a total loss of over Six Thousand Dollars (\$6,000.).

Other manufacturers of ginger ale were using crowns having a disc of cork composition and for the same were paying from 17½ to 18½ cents per gross. These crowns were also recognized as not satisfactory. But aside from the natural disc crowns which were considerably more expensive, there were no other crowns on the market even reasonably suitable.

In 1928, when the Crown Cork & Seal Company, Inc., began commercial manufacture of the "paper spot" crown of the above entitled application, over sixty-four thousand (64,000) gross of these crowns were sold. They supplanted in use during 1928 principally the previously used composition cork disc crowns. The users of the new paper spot crown in 1928 paid for the paper spot

crowns 40% more than they had previously paid for the composition cork disc crowns.

In 1929 the Crown Cork & Seal Company, Inc., shipped over one hundred thousand (100,000) gross of paper spot crowns. During that year they supplanted not only the composition cork crowns, but, to a very large extent, the natural cork disc crowns. They were sold to the former users of the natural cork disc crowns at a very slightly lower price than the natural cork disc crowns.

In 1930 the Crown Cork & Seal Company, Inc., sold over two million one hundred thousand (2,100,000) gross. In 1931 the Crown Cork & Seal Company, Inc., sold approximately two million (2,000,000) gross of paper spot crowns.

By 1931, such companies as Canada Dry, Clicquot Club Company, Gosman Ginger Ale and the Moxie Company of America, had adopted the paper spot crown almost exclusively in place of the previously used natural cork disc crowns. Other companies, such as the Stroh Products Company, The C. E. May Company and the Hoffman Beverage Company had adopted the same instead of the formerly used composition cork disc crowns and at a price approximately 40% higher.

In other words, the new product had almost completely supplanted the old of natural cork disc and composition cork disc crowns by 1931 in the business of the large bottlers of ginger ale in the United States. The product has been marketed with continued success since its introduction in 1928 and is generally recognized by the trade as far superior of any product previously available.

The increase in sale from less than one hundred thousand (100,000) gross in 1928 to over two million (2,000,000) gross in 1930 was accomplished virtually without advertising, and I can find no record of any advertising expense with reference to

the paper spot crown other than one or two simple announcements in trade journals that the company was making at this price. In practically every instance, there was no particular effort made to sell the paper spot crown. The same were merely submitted to companies such as Canada Dry and the Clicquot Club Company. After months of test, these companies adopted the new product of their own volition in preference to the crown they had previously used.

Further deponent sayeth not.

Frederick E. Gustafson

Subscribed and sworn to before me this 21st day of

December, 1932.

William B. Bell
Notary Public

(SEAL)

MY COMMISSION EXPIRES MAY 2, 1933

a/65

1011.

Letter
13

IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

BOTTLE CAPS & METHOD
OF MANUFACTURING SAME,

Filed Oct. 31, 1930,

Serial No. 491,546.

U. S. PATENT OFFICE

JAN 23 1933

DIVISION 62

Div. 62.

* * *

January 21, 1933

Hon. Commissioner of Patents,

Washington, D. C.

Sir:

As a further reason for allowing this application at the present time, attention of the Examiner is called to the fact that the pending interference 60,278 has terminated favorably to the applicant as a result of decisions of the Examiner of Interferences and the Board of Appeals.

Respectfully,

A handwritten signature, likely of Albin H. Warth, written in ink. The signature is stylized and cursive. Below the signature, the word "Attorneys" is printed.
Attorneys.

JJD:n

a/4

JAN 23 1933

IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

BOTTLE CAP & METHOD OF MANU-
FACTURING SAME,

Filed October 31, 1930,

Serial No. 492,546.

U S PATENT OFFICE

JAN 23 1933

DIVISION 62

Div. 62.

* *

December 29, 1932

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

Supplementing the amendment filed December 21st, the following is submitted as a discussion of the propriety of allowing this application while the parent application is involved in interference (60,931) with the Lange patent 1,779,684, granted Oct. 28, 1930. The record is clear on the proposition that applicant and the Patent Office are in agreement that the subject matter of the claims presented in this case is patentably distinct from and divisible from the subject matter of the claim (2) of the Lange patent, as well as from all the claims of the Lange patent. In the parent application the Examiner required division between claims to a laminated material as such and claims to a cap. Upon allowance of this application the parent case in interference will be restricted to a laminated material as such, and claims of the nature now presented here will not be retained.

Rule 106 distinctly provides for an allowance of an application upon subject matter divisible from that involved in interference. Under that rule, this application is presented.

The subject matter is not only divisible from the claim (2) of the Lange patent involved in interference, but it is divisible from all the claimed subject matter in the Lange patent.

1013

It is obvious from a reading of Lange's claims that his patent is definitely restricted to a laminated material having a varnish coating of a specific type. No decision in the interference involving claim 2 could have any bearing upon the patentability of the claims now presented for two reasons: First, the claim defines a specific type of varnish composition, i. e., alcohol resistant. Second, the claim is not directed to the type of adhesive to which the claims presented in this application are directed, namely, "heat fusible, acid resistant and water insoluble".

We do not overlook the fact that the Lange patent discloses an adhesive of this type. But Lange has never maintained himself, at any time, either in his claims or elsewhere, to be the inventor of the specific combination defined in the claims here presented.

As a matter of fact, the testimony which Lange took in the interference and which he has consistently refused to file, is clear on the proposition that Lange never, at any time, used gutta percha or "a heat fusible, acid resistant and water insoluble adhesive". Of course, we are unable to prove this to the Examiner, for the reason that Lange declines to file his testimony; the record in the interference shows that. We submit, therefore, that the applicant should not be penalized by delaying the grant of his patent merely because Lange declines to file his testimony in the interference as both the Commissioner and the Examiner of Interferences have required. Since Lange will not file his testimony so that the Examiner may see that it has nothing to do with the type of adhesive defined in the claims now presented, we submit that the Examiner should quite properly take applicant's word to that effect. As a matter of fact, the Lange patent does not relate to a center spot type of cap which each of the claims defines. Nor does it relate to the combination of a hard, high-gloss paper disc with its outer surface varnished and having a backing

of "heat fusible, acid resistant and water insoluble adhesive". We submit, therefore, that the claims are clearly patentable over the disclosure in the Lange patent and the claim in interference because they define features not covered by the claim and not touched upon by the Lange testimony. To refuse to grant applicant a patent upon this subject matter divisible from the subject matter in interference, as previously held by the Patent Office, in its former requirement for division, would be to penalize the applicant because of Lange's persistent refusal to obey the orders of the Commissioner and the Examiner of Interferences to file his testimony which would at once show that the testimony does not relate to the combination claimed here, namely, (a) a center of varnished paper disc consisting of hard, high-gloss paper, e. g., express paper or water finished bleached Kraft paper, and (b) a backing of heat fusible, acid resistant and water insoluble adhesive, e. g., gutta percha, the backing and disc both being of smaller diameter than a cushion disc on which they are imposed. That subject matter is plainly divisible from what is involved in interference, and it is submitted that the application should be allowed. This is thought to be in accord with the rules in the following decisions:

Ex parte Willson, 1892 C. D. 111;

Ex parte Bullier, 1899 C. D., 155 and

Ex parte McCormick, 1904 C. D. 575.

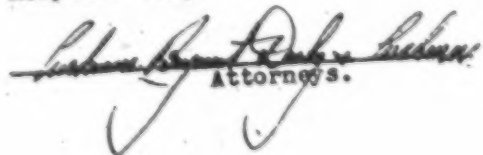
Finally, it is submitted that the state of facts involved in this case warrants an exception to the strict rule that the entire disclosure of all applications involved in an interference should be considered as prior art. In other words, the disclosure of the Lange patent should not be accepted as prior art, for the reason that Lange has a filing date subsequent to Warth; Warth filed on May 5, 1929 (parent application) and Lange did not file until

February 1930.

Furthermore, Lange has declined to file any testimony in the interference, and, therefore, so far as Lange is concerned, there is no possibility of his presenting evidence having to do with the use of the subject matter defined in the claims here presented, which, admittedly, is patentably distinct from the subject matter involved in interference. In his communication of Sept. 23, 1932, Lange's attorneys said that, so far as Lange is concerned, "this interference was finally terminated last April". He refers to the dissolution by the Commissioner. That being the case, Lange has definitely waived any right he might otherwise have for the Patent Office to consider his patent in its entirety, or even in part, as prior art against this divisional application. It is true that the interference has been continued and that applicant has filed a bill in equity to obtain his copy of the Lange testimony and for other purposes to enforce generally applicant's rights in the premises.

Therefore, since the subject matter defined in the claims is divisible and patentably distinct from the subject matter in interference, since Lange is a junior party by eight months, and has definitely refused to file any testimony, it is submitted that his patent should not be treated as prior art against this earlier filed application presenting claims which are not readable on the Lange disclosure.

Respectfully,


Attorneys.

JJD:U

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Div. 62 - CB.
ADDRESS ONLY
THE COMMISSIONER OF PATENTS
WASHINGTON, D. C.

Serial No. 492546

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE

WASHINGTON January twenty-six, 1933.

Albin H. Warth, Assor.

Your APPLICATION for a patent for an IMPROVEMENT in
BOTTLE CAP AND METHOD OF MANUFACTURING SAME

filed Oct. 31, 1930 has been examined and ALLOWED with 6 claims.

The final fee, THIRTY DOLLARS, WITH \$1 ADDITIONAL FOR EACH CLAIM ALLOWED IN EXCESS OF 20, must be paid not later than SIX MONTHS from the date of this present notice of allowance. If the final fee be not paid within that period, the patent will be withheld, but the application may be renewed within one year after the date of the original notice with a renewal fee of \$30 and \$1 additional for each claim in excess of 20.

The office delivers patents upon the day of their date, on which date their term begins to run. The preparation of the patent for final signing and sealing will require about four weeks, and such work will not be begun until after payment of the necessary final fee.

When the final fee is paid, there should also be sent, DISTINCTLY AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE OF THE INVENTION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF ALLOWANCE (which is the date of this circular), DATE OF FILING, and, if assigned, the NAMES OF THE ASSIGNEES.

If it is desired to have the patent issue to an ASSIGNEE OR ASSIGNEES, an assignment containing a REQUEST to that effect, together with the FEE for recording the same, must be filed in this office on or before the date of payment of the final fee.

After issue of the patent, uncertified copies of the drawings and specifications may be purchased at the price of TEN CENTS EACH. The money should accompany the order. Postage stamps will not be received.

The final fee will NOT be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

NOTICE.— WHEN THE NUMBER OF CLAIMS ALLOWED IS IN EXCESS OF 20, NO SUM LESS THAN \$30 PLUS \$1 ADDITIONAL FOR EACH CLAIM IN EXCESS OF TWENTY CAN BE ACCEPTED AS THE FINAL FEE.

Respectfully,

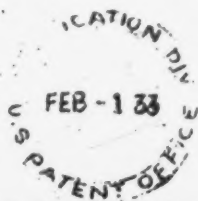
Thomas E. Robertson
Commissioner of Patents.

Cushman, Bryant, Darby
& Cushman,
American Security Bldg.,
Washington, D. C.

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

UNCERTIFIED CHECKS WILL NOT BE ACCEPTED.

1017

SUPPLEMENTAL OATH

U.S. PATENT OFFICE

FEB 2 - 1933

DEPT. OF COM.

Albin H. Warth,

BOTTLE CAP & METHOD
OF MANUFACTURING SAME,

Filed October 31, 1930,

Serial No. 492,546,

Allowed January 26, 1933.

U.S. PAT.

FEB - 3 1933

DIVISION 62

CITY OF BALTIMORE)
:SS.
STATE OF MARYLAND)

Albin H. Warth, whose application for Letters Patent for Improvements in Bottle Cap & Method of Manufacturing Same, was filed October 31, 1930, Serial No. 492,546, and allowed January 26, 1933, being duly sworn, deposes and says that the subject matter of the allowed claims hereinafter appearing was part of his invention, was invented before he filed his original application, above identified for such invention, and that deponent does not know and does not believe that the same was known or used before his invention, or patented or described in a printed publication in any country more than two years before his application, or patented in a foreign country on an application filed by him or his legal representatives or assigns more than twelve months before his application, or in public use or on sale in this country for more than two years before the date of his application, and that the same has not been abandoned.

1. A bottle closure comprising a metallic shell, a cushion disk in said shell, a facing disk of hard paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of heat-fusible, acid-resistant and water insoluble adhesive material coextensive in area with the facing disk between the latter and the cushion disk and uniting the two disks.

2. A bottle closure comprising a metallic shell, a cushion disk in said shell, a facing disk of hard, high gloss paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of heat-fusible, acid resistant and water insoluble adhesive material coextensive in area with the facing disk between the latter and the cushion disk and uniting the two disks.

3. A bottle closure comprising a metallic shell, a cushion disk in said shell, a facing disk of hard paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of gutta percha coextensive in area with the facing disk between the latter and the cushion disk and adhesively uniting the two disks.

4. A bottle closure comprising a metallic shell, a cushion disk in said shell, a facing disk of hard, high-gloss paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of gutta percha coextensive in area with the facing disk between the latter and the cushion disk and adhesively uniting the two disks.

5. A bottle closure comprising a metallic shell, a cushion disk facing said shell, a facing disk of express paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of gutta percha coextensive in area with the facing disk between the latter and the cushion disk and uniting the two disks.

6. A bottle closure comprising a metallic shell, a cushion disk facing said shell, a facing disk of water-finish bleached kraft paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of gutta percha coextensive in area with the facing disk between the latter and the cushion disk and uniting the two disks.

William H. H. H.

Subscribed and sworn to before me, a Notary Public,
this 21st day of January, 1933.

Horace A. Schmitt
Notary Public.

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MAIL DIVISION

FEB -23 FINAL FEE PAID TO THE COMMISSIONER OF PATENTS

U.S. PATENT OFFICE

(Be careful to give correct Serial No.)

Serial No. 492,546

Div. 62

INVENTOR:

Albin H. Warth

PATENT TO BE ISSUED TO

As per record

NAME OF INVENTION, AS ALLOWED:

Bottle cap and method of manufacturing same

DATE OF PAYMENT:

February 2, 1933

FEE:

Final 6 cls.

DATE OF FILING:

October 31, 1930

DATE OF CIRCULAR OF ALLOWANCE:

January 26, 1933 (This patent should issue on Feb. 28,

527,012 and 414,614)
The Commissioner of Patents will please apply the accompanying fee as indicated above.

Cushman, Bryant, Darby & Cushman
Attorney.

SEND PATENT TO

Attorneys

Final fee will not be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office, NOR WILL THEY BE APPLIED IN PENDING APPLICATIONS.

MAIL DIVISION

FEB - 2 '33

TELETYPE

Pw. 62

IN THE UNITED STATES PATENT OFFICE

Albin H. Warth

BOTTLE CAP AND METHOD OF
MANUFACTURING SAME

Filed October 31, 1930

Serial No. 492,546

HON. COMMISSIONER OF PATENTS,

Sir:

Herewith final Government fee in the above application.

It is requested that this patent issue on the same
day with the following applications: Serial Nos. 527,012 and
414,614.

Respectfully,

Cushman, Blythe & Earl
Attorneys

February 2, 1933

809
1021

Feb. 28, 1933.

A. H. WARTH

1,899,783

BOTTLE CAP AND METHOD OF MANUFACTURING SAME

Original Filed May 5, 1929

Fig. 1.

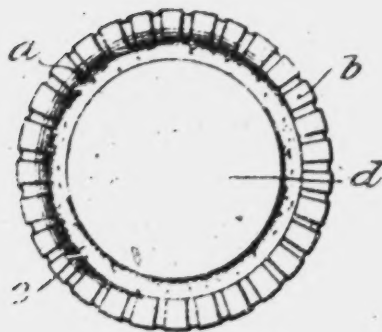


Fig. 2.

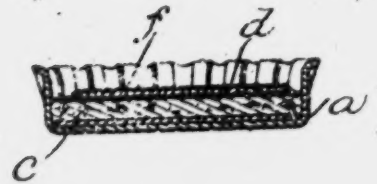


Fig. 3.

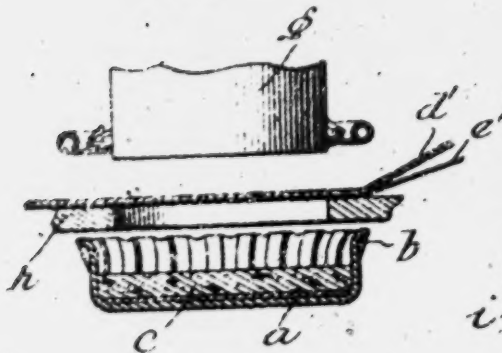


Fig. 4.

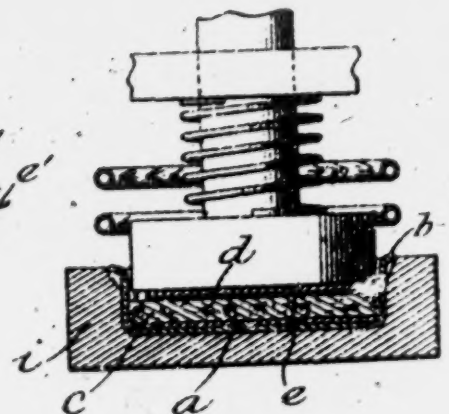
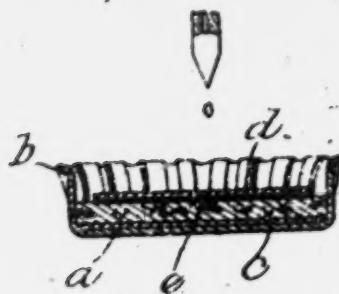


Fig. 5.



Inventor

Albin H. Warth

by *Lushman Bryant & Co.*

Patented Feb. 28, 1933

1,899,783

UNITED STATES PATENT OFFICE

ALBIN H. WARTH, OF BALTIMORE, MARYLAND, ASSIGNOR TO CROWN CORK & SEAL COMPANY, INC., OF BALTIMORE, MARYLAND, A CORPORATION OF NEW YORK

BOTTLE CAP AND METHOD OF MANUFACTURING SAME.

Original application filed May 5, 1929, Serial No. 360,895. Divided and this application filed October 31, 1930. Serial No. 492,546.

My invention relates to bottle caps and the method of making same, and more particularly to a cap consisting of a metallic shell containing a cushion disk having what is known as a protecting center disk, and to the method of applying this center disk.

Bottle caps of the type to which my invention relates have heretofore been extensively used for sealing bottles containing mineral waters and other fluids having a deleterious action upon the cushion disk within the cap, particularly when this disk is made of composition cork. Ordinarily the facing center disk has been made of tin foil cemented or otherwise attached directly to the cushion disk, or secured thereto by means of a fibrous backing having applied thereto a dry adhesive made tacky by means of a thin film of moisture applied to the cushion disk.

It has been attempted to secure the facing disk upon the cushion disk by means of a liquid cement, but this has proven impracticable because, in order to secure a satisfactory bond, it was necessary to apply the adhesive in quantity having such thickness that, upon the application of pressure to secure the desired intimate relation between the facing disk and the cushion disk, there was a tendency of the disk to slide into an eccentric position in relation to the disk. In order to permit the effective sealing of a bottle with a cap having a tin center or other protective facing, it is essential that the facing disk be accurately centered in relation to the cushion disk so as to avoid any possibility of the neck of the bottle sealing against the facing disk, since this would result in the presence of minute channels or voids at the point of contact of the facing disk with the neck of the bottle. Furthermore, at the points where the line of contact crossed the periphery of the disk, there would be exposure of a small area of the cushion disk to the contents of the bottle.

With the above conditions in mind, the object of my present invention is to provide a bottle cap having a protecting center disk secured in position by a fusible medium devoid of moisture, and thus avoid any possibility of slippage of the disk while pressing it

into the necessary intimate relation with the cushion disk.

The medium used for securing the facing disk in place is of itself water insoluble and acid resisting and, being fusible at low temperatures, will form a very thin coating between the facing disk and the cork so as to preclude the possibility, in the event of imperfections in the facing disk, of the cork being attacked by the fluid contents of a bottle. A medium which is itself elastic or resilient, such as gutta percha, is preferred, since the same will provide an elastic cushion for the fibrous disk and thereby minimize the danger of rupturing the latter.

The cementing medium may be readily handled, is not affected by ordinary changes of temperature or atmospheric conditions, may be readily cut to size simultaneously with the cutting of the facing disk so as to secure a bonding stratum co-extensive with the area of the facing disk, and may be quickly fused to secure the desired bonding action between the facing disk and the cushion disk.

In addition to the foregoing characteristics, I am enabled to effectively use a facing disk of fibrous material, since the nature of the bonding medium is such as to firmly adhere to hard finished papers as well as to natural cork or composition cork.

In the commercial production of such caps, it is essential that the facing disk, during production, be cut from a strip of material, and since the edges of the disk cannot be protected by the same material used for waterproofing the surface of the disk, I have found it desirable, after the application of the facing disk, to apply, to the entire surface of the cap exposed interiorly of the cap, a very thin protecting surfacing of water repellent material. This not only serves to prevent adherence of the cork to the neck of the bottle, and to exclude atmospheric air from the exposed portions of the cushion disk before the cap has been applied to a bottle so as to prevent darkening of the cork by oxidation, but will at the same time, protect the perimeter of the center facing disk to an extent to minimize likelihood of the absorption of moisture at the edge of the disk.

Bottle caps of the general type of which my invention relates must be produced at a very low cost, and the various materials entering into same and the method of assembling and finishing are matters of great desideratum.

The herein described method of making the bottle cap of my invention relates merely to the manner of applying the center facing disk and finishing the cap, it being understood that the assembling of the metal shell and the mounting of the cushion disk therein are entirely independent operations, preparatory to the practicing of the method of my present invention.

The invention consists primarily in a bottle cap embodying therein a metallic shell, a cushion disk within said shell, a facing disk of water repellent, gas impervious fibrous material, such as a relatively hard, high-gloss or water-finish paper provided with a coating of resistant varnish, said disk being of smaller diameter than, and concentric with, said cushion disk, and a thin stratum of a water insoluble, fusible, cementitious material, such as gutta percha co-extensive in area with said facing disk, between said facing disk and said cushion disk; and in such other novel characteristics as are hereinafter set forth and described, and to the method of making said caps, all as hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawing:

Figure 1 is a bottom plan view upon an enlarged scale of a bottle cap embodying the invention.

Figure 2 is a section on the line 2—2 of Fig. 1.

Figure 3 is a vertical section illustrating the first stage of applying the center disk to the cushion disk.

Figure 4 is a similar view illustrating the final stage; and

Figure 5 is a view illustrating a stage intermediate those illustrated in Figs. 1 and 2, used when it is desired to apply a wax finish to the cushion disk.

Like letters refer to like parts throughout the several views.

In the accompanying drawing, notwithstanding that the caps themselves are shown upon an enlarged scale, the dimensions of the facing disk and the intermediate bonding stratum are of greatly increased thickness as compared with the actual materials used, even when compared with the enlarged scale of the other parts of the cap.

A bottle cap embodying the invention consists of the usual metallic shell *a* having a fluted skirt *b*. Secured within this shell is a cushion disk *c*, which may be either of natural, or of composition, cork. Composition cork is more extensively used than natural cork, and the employment of a tin or other center

facing disk is particularly desirable with composition cork cushion disks, since the contents of a bottle will more readily attack the binder of the composition cork than it will natural cork.

It is essential, to secure a reliable seal, particularly with carbonated beverages, that the neck of the bottle seal directly against the cushion disk, and not against the center facing disk. This is generally understood, and I follow, in the bottle cap of my present invention, the old practice of using a center facing disk *d*, the diameter of which is relatively less than that of the cushion disk, so that when the cap is applied to a bottle, the lip of the bottle will be positioned between the facing disk and the skirt *b*, the contacting area being such as to bring the facing disk to a point at the inner edge of such contacting area.

While heretofore tin centers have been extensively used, it has been found impracticable to use paper disks for this purpose, because in order to make them impervious to gas, and non-absorbent, the finish of the paper had to be such as prevented the formation of a sufficiently good bond between the facing disk and the cushion disk to permit the practical commercial production of such caps.

To correct this condition, it has long been the practice to bond a metal foil, such as tin or aluminum, to a fibrous backing, to which latter the cement would firmly anchor. With this construction of the facing disk it was the practice to apply a dry adhesive to the fibrous backing strip and to make this adhesive tacky by the application of moisture to the cushion disk immediately prior to the coating of the facing strip and the application of the disk cut therefrom to the cushion disk.

While caps, having a facing disk of the character immediately above described, have been extensively used, their production cost, as compared with the required low cost of such caps, has been very high.

Aside from the expense of caps provided with foil spots, their use has been extremely limited, due to the fact that foil is not sufficiently resistant to acids and alkalies.

I am aware that it has heretofore been proposed to provide a cap with a center spot of paper, and that this is broadly covered in the United States patent to McManus, No. 1,339,066, granted May 4, 1920. The present invention constitutes an improvement upon the subject matter of said patent.

The use of center spots of paper on a commercial scale has not heretofore been economically practicable for several reasons. First, paper has a tendency to absorb liquids and gases and to impart a taste to and discolor many beverages. Moreover, upon absorption of moisture, the paper tends to rupture and expose the cushion material which

it overlies. Again, the difficulty of applying a center spot of paper to the cushion disk presents problems altogether different from the use of a facing disk coextensive with the cushion disk, as for example the facing disclosed in my Patent No. 1,656,614, granted June 17, 1928. A facing which completely covers the cushion disk may be readily united adhesively to the sheet or blank from which the cushion disk is stamped, or in other words, the facing sheet and cushion sheet are united adhesively, and the laminated disks punched therefrom. But in applying a formed center spot, as distinguished from a sheet, due to the fact that it is necessary to absorb the moisture in the adhesive, and as heretofore explained, during the period of moisture evaporation the spot tends to become displaced. This has presented a problem in large scale production, which manufacturers have not heretofore overcome.

Furthermore, due to the moisture and gas absorbent properties of paper, the exposed edge of the paper spot is of an area which cannot be protected by a facing, such as foil or varnish, since the spot is punched from sheets. This objection I have overcome by using a combination consisting of paper of the character described and a liquid and gas resistant fusible adhesive.

I have found that by using a paper of the character herein described, namely, a tough paper having a hard or high-gloss finish, for example, such as is termed a water-finish, the same will not fracture, has an inherent resistance to liquids and gases and serves as an excellent carrier for an exposed, or outer facing of varnish and for a backing layer of water-insoluble, heat-fusible and acid and gas-resistant adhesive. I prefer an adhesive having these characteristics and which is also elastic so as to provide an elastic or cushion backing for the varnish layer and the rupturable paper layer.

Extensive commercial use of this new cap has established that it is resistant to acids and alkalies and, therefore, useful in connection with liquids with which a foil spot cannot be employed, and that it is at the same time substantially less expensive than a foil spot cap. Moreover, it does not present the mechanical difficulties which are present in applying a foil center spot. The hard, tough paper serves as an excellent carrier for the varnish film as well as for the gutta percha and insures coextensive varnish and gutta percha films. The gutta percha serves not only as a medium for uniting the paper and varnish films to the cushion layer, but constitutes an acid and gas-resistant, water-insoluble, backing layer, thereby preventing moisture, acids or gases which penetrate the varnish film or paper from attacking the cushion layer. Moreover, the use of a hard paper having a water-finish or high-gloss

permits the use of even films of varnish and gutta percha, since the paper does not absorb either the fused gutta percha or the varnish to any appreciable extent. Consequently, it is unnecessary to employ more varnish or thicker gutta percha than is required to cover completely the surfaces of the paper.

In the cap of my invention, the center disk *d* is composed of a glazed hard paper, such as is generally known as express paper, sulphite paper or bleached kraft paper having a water-finish, i. e., high-gloss finish. Such papers are, of themselves, independently of the finish, fairly non-absorbent, and when required for pasting purposes, are usually provided with a dry gummed surface. The process of producing such gummed paper results in a curl in the paper.

While such hard tough papers are extremely desirable because of their inherent non-absorbent, gas impervious qualities, their use in bottle caps of the type to which my invention relates was impracticable, prior to my invention, because of the difficulties of feeding and cutting previously gummed paper and of cementing same to the cushion disk.

In the cap of my invention, however, to obviate these difficulties, I use ungummed paper of the type above referred to, and secure it to the cushion disk by means of a disk of what is known as gutta-percha tissue, which material, in strip form, may readily be handled in a machine and collated with a facing disk paper strip so as to permit a disk of the paper and a disk of the gutta-percha to be simultaneously cut by the same dies. This not only simplifies the production of the cap, but results in a bonding stratum *e* between the facing disk and the cushion disk co-extensive in area with the facing disk itself. The strip of paper from which the disk *d* is cut is indicated at *d'*, while the strip of gutta-percha forming the stratum *e* is indicated at *e'*.

Gutta-percha is particularly desirable as a bonding medium, not only because it ensures the distribution of the bonding stratum throughout the entire area of the facing disk, but because it will readily adhere, when softened to the desired extent, to the cork or composition cork, and to hard paper. Furthermore, it possesses the qualities of being non-absorbent and non-impervious to gases. The tissue itself is very thin, about a thousandth of an inch, and when softened, instantly adheres to the cork and to the paper, and is not subject to side sliding or slippage, such as liquid cements. The gutta-percha is not affected by fruit acids, minerals, CO₂ or other ingredients present in the fluid contents of bottles with which such caps are designed to be used.

The gutta-percha may be fused or melted at temperatures sufficiently low to avoid in-

jury to the other previously assembled portions of the cap, and will return to its former solid form at normal temperatures with considerable rapidity.

5 In the finished cap, particularly when such caps are desired for use with spring water or mineral waters, it is desirable, after the application of the center disk, to apply a very thin superficial coating *f* of water repellent material, such as paraffin, ceresin or other waxes, throughout the exposed faces of the cushion and center disk. This coating serves to prevent adherence of the cushion disk to the neck of the bottle, due to the action of the water upon the cork or upon the binder of composition cork, and also serves to more or less effectively seal the raw edges of the paper of the center disk, and prevent possibility of the softening of the paper and its ultimate disintegration as a result of a slow absorption of moisture through such raw edges.

A cap embodying the invention lends itself to rapid production methods, which will now be described.

Preparatory to the application of the center disk *d* to the cushion disk *c*, the latter is completely assembled in relation to the shell *a*. The caps, completely assembled, may be rapidly fed in relation to cutting dies *g* and *h*, and as they are brought under these dies, superimposed strips *d'* of paper, and *e'* of gutta percha tissue are fed between the die plate *h* and the punch *g*. With the descent of the punch *g*, disks are simultaneously cut from the strip *d'* and *e'*, such disks being pressed by the punch upon the disk *d* with their centers concentric with each other and with said disk *d*. The punch *g* is maintained at an elevated temperature required to melt the gutta-percha of the strip *e'* and make it tacky, so that substantially simultaneously with the pressing of the disks *d'* and *e'* against the disk *c*, the disks *d'* and *e'* will be bonded together with sufficient permanency to ensure accurate positioning of the disk *e* and avoid likelihood of displacement of same thereafter. It is preferable, after the disk *e* has thus been bonded to the disk *d*, to thereafter subject them to continuing heat and pressure for a sufficient interval to ensure the complete fusion of the gutta-percha and a close adhesion of every portion of the disk *e* to the disk *d*.

For this purpose I have shown a carrier *i* and a heated spring pressed plunger *j*.

In the drawing, I have shown the punch *g* and the plunger *j* as being heated by gas jets, but this is immaterial to the invention and other heating means may be employed.

It will be noted that by following the methods above specified, the heat necessary for the fusing of the gutta-percha is applied at the surface of the disk *d*, and that the time intervals are sufficiently short to avoid any

substantial absorption of heat by the cushion disk *c*. The very thin gutta-percha tissue will melt very rapidly, and after the removal of the punch *g* or plunger *j* will solidify with great rapidity and form a substantially imperceptible stratum intermediate the discs *c* and *d*.

If it is desired to provide the cap with a superficial wax surfacing throughout the area of the cushion disk *c* and center disk *d*, a very small quantity of wax, such as paraffin or ceresin wax or wax compounds, may be delivered upon said disks within the shell *a* following the application of the disk *d* to the disc *c*, and prior to the application of heat and pressure through the medium of the carrier *i* and plunger *j*. Such heat and pressure will spread a drop of wax in a very thin film about the entire exposed face of the two disks, the raw edge of the disk *d* also being coated with this wax.

This thickness of the disc *d* will be approximately five-thousandths of an inch, while the thickness of the binding stratum *e*, in the ultimate product, will be relatively less than the thickness of the gutta-percha tissue, or a mere fraction of a thousandth of an inch. The wax surface stratum will also be but a mere fraction of a thousandth of an inch, and is not perceptible to the eye, although sensible to the touch.

The glazed face of the disk *d* does not require a wax surfacing, and, so far as I have been able to determine, most of the wax is expressed from this surface and forced from the disk to the exposed area of the cushion disk *c*.

If it is desired to provide the cap with a wax surface as described, it is essential that this surface be applied after the center disk *d* has been assembled in the cap, since the presence of wax upon the surface of the cushion disk *c*, prior to the application of the disk *d*, would prevent a proper bonding of this disk *d* to the cushion disk *c*.

The glazed surface upon the strip *d'* consists of a waterproof compound consisting of resin, China-wood oil and a drier, and containing a plasticizer.

Express paper which has a high-gloss or water-finish, sulphite paper and bleached kraft paper are all well known commercial products.

This application is a division of my co-pending application Serial No. 360,895, filed May 5, 1929.

It is not my intention to limit the invention to the precise details herein described, it being apparent that such may be varied without departing from the spirit and scope of the invention.

I claim:

1. A bottle closure comprising a metallic shell, a cushion disk in said shell, a facing disk of hard paper having a varnished outer

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surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of heat-fusible, acid-resistant and water insoluble adhesive material co-extensive in area with the facing disk between the latter and the cushion disk and uniting the two disks.

2. A bottle closure comprising a metallic shell, a cushion disk in said shell, a facing disk of hard, high gloss paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of heat-fusible, acid resistant and water insoluble adhesive material coextensive in area with the facing disk between the latter and the cushion disk and uniting the two disks.

3. A bottle closure comprising a metallic shell, a cushion disk in said shell, a facing disk of hard paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of gutta percha coextensive in area with the facing disk between the latter and the cushion disk and adhesively uniting the two disks.

4. A bottle closure comprising a metallic shell, a cushion disk in said shell, a facing disk of hard, high-gloss paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of gutta percha coextensive in area with the the facing disk between the latter and the cushion disk and adhesively uniting the two disks.

5. A bottle closure comprising a metallic shell, a cushion disk facing said shell, a facing disk of express paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of gutta percha coextensive in area with the facing disk between the latter and the cushion disk and uniting the two disks.

6. A bottle closure comprising a metallic shell, a cushion disk facing said shell, a facing disk of water-finish bleached kraft paper having a varnished outer surface, said disk being of smaller diameter than and concentric with said cushion disk, and a stratum of gutta percha coextensive in area with the facing disk between the latter and the cushion disk and uniting the two disks.

In testimony whereof I have hereunto set my hand.

ALBIN H. WARTH.

a/s/

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DEFENDANT'S EXHIBIT B

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DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE

To all persons to whom these presents shall come, Greeting:

THIS IS TO CERTIFY that the annexed is a true copy from the records
of this office of the File Wrapper and Contents, in the
matter of the

Letters Patent of

John Alberti, Assignor to
The International Cork Company,

Number 1,199,026,

Granted September 19, 1916,

for

Improvement in Closures.

IN TESTIMONY WHEREOF I have hereunto set my
hand and caused the seal of the Patent Office to be
affixed, at the City of Washington, this **nineteenth**
day of **January**, in the year of our Lord one
thousand nine hundred and thirty-four and of the
Independence of the United States of America the
one hundred and fifty-eighth.

ATTE

St. J. Wilson
Chief of Division

Conway P. Cor
Commissioner of Patents

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DIV. 440

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(EX'R'S BOOK) 277/374

NUMBER (Series of 1900),

864867PATENT No. 1199026

Name

John Alberti
Owner to The International Park Company of
Brooklyn, N.Y. a corp of New York

of

County of

State of

Invention

New YorkNew YorkClosures

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PARTS OF APPLICATION FILED

Division of App., No.

ORIGINAL

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Petition

Oct 3

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Affidavit

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Specification

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Drawing

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Photo Copy

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First Fee Cash

\$15, Oct 3

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Appl. filed complete

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Examined and Passed for Issue

Feb 23

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By E. H. RoscoeExr. Div. 70

Exr. Div.

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Feb. 25

1916

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Associate Attorney

(No. of Claims Allowed 7)

Title as Allowed

Closures(Cl. 215-10)

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Petition.

To the Commissioner of Patents.

Your Petitioner JOHN ALBERTI, a citizen of the United States,and a resident of 99 SuttonStreet, in the City of New York,
in the County of Kings and State of New York, whose Post Office address is 99 Sutton Street, Brooklyn, N. Y.pray 5 that Letters Patent may be granted to him for the improvements in CLOSURES,set forth in the annexed specification; and he hereby appoints Sigmund Herzog, (Registered 7356) of 116 Nassau Street, New York, State of New York, his attorney, with full power of substitution and revocation, to prosecute his application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.Inventor's Signature
Full Name*John Alberti***Specification.**

To all whom it may concern:

Be it known that I, JOHN ALBERTI, a citizen of the United States,and a resident of the City of New York,
in the County of Kings and State of New York,
have invented certain new and useful improvements in CLOSURES,

of which the following is a specification:

The present invention relates to closures or stoppers for bottles and other receptacles; more particularly it pertains to closures of the cap variety including those termed "crown corks"

5 Closures of this type usually comprise a metallic cap or crown to be locked to the neck of the bottle, etc., and a sealing disk or packing of cork or the like, that is held within the cap, for instance, by means of a suitable sticking material.

10 It has been found in practice that in many cases it is impracticable to permit the liquid contents of the bottle or other receptacle to come into contact with the sealing disk of cork or like material, as some liquids, such as pure water, mineral water or beverages of delicate flavors, are
15 apt to acquire a "corky" taste. The commercial value of such liquids is thus greatly impaired. In order to obviate this and similar defects of the crown corks and like closures, it has been proposed heretofore to cover the outer, that is to say the exposed faces of the sealing disks, with thin layers of pliable or ductile metal, such as chemically pure block
20 tin, aluminium or alloys of tin. With the use of these closures, however, serious difficulties have been found, which prevent the same from becoming commercially successful. One of these defects consists in that the layer of metal is apt to wrinkle and, thus, to prevent the formation of an airtight seal. Moreover, the metal, owing to its inherent properties, cannot as readily conform to defects in the glass, or other materials of which the bottle or receptacle is made, as cork
25 or like substances will do. The result is that the slightest

defect in the neck of the receptacle prevents the formation of airtight seals with these closures. When it is taken into consideration that bottles, or like receptacles upon which crown corks or similar closures are used, are manufactured in great quantities and at the lowest possible cost, it will be obvious that little care can be taken in the manufacture thereof to obtain smooth and perfect-necked articles, and, inasmuch as the metal covered closures of the type above described did not fulfill, as mentioned above, in conjunction with rough and imperfect bottle necks their purpose, it will be easily understood why the commercial use of such closures could not be successful.

It is now one of the objects of the present invention to obviate the defects of the covered closures heretofore in use, that is to say to obtain a closure which forms under all circumstances an airtight seal, yet prevents completely the contamination of the bottle contents.

With this and other objects in view, which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter fully described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and details of construction within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:

(X)

Figure 1 is an elevation, partly in section, of a bottle closure constructed in accordance with the present invention; Fig. 2 is a bottom plan view thereof; and Fig. 3 is a vertical section taken through a portion of the closure on an enlarged scale. (2)

In the drawings, a bottle closure of the crown cork type has been shown for purposes of illustration, it being, however, obvious that the invention may be applied to any and all closures of the cap variety, the forms of the metallic caps of the closure being immaterial as far as the invention is concerned, as will readily appear from the following description.

Referring now more particularly to the drawings, the numeral 10 indicates a cap, comprising a substantially cylindrical head 11 and a corrugated flange 12, which is adapted to be locked in the well known manner to the exterior of a bottle neck. This cap is made, as usual, of thin sheet iron coated with tin. In the cap is disposed a sealing disk or packing 13 of cork or like material, which is united with the cap, for instance by an interposed sticking material 14, or in any other suitable manner. To the outer, or in other words to the exposed face of the sealing disk, is attached concentrically with the latter a thin layer of tenacious or ductile metal, such as, for instance, chemically pure black tin, aluminium or an alloy of tin. This layer is made in the form of a disk, denoted by the numeral 15, its diameter being smaller than the diameter of the sealing disk 13, and being stuck to the latter by an interposed cementing medium, shown at 16. This cementing medium should, preferably.

be of the type that is insoluble in liquids after it has set and formed a union between the packing and the metallic disk; it should be insoluble at normal temperature and also at temperatures above the normal. It has been found in practice that albumen is particularly adapted for use in connection with this invention, it being inodorous, tasteless, soluble in water and thus readily preparable for use. Moreover albumen coagulates easily and is rendered insoluble at about 140° Fahrenheit, the coagulation resulting in a firm union between the packing of the cork or the like and the metallic disk, such union being brought about almost instantaneously.

In manufacturing these closures, the cementing medium is applied either to the exposed face of the sealing disk or packing of cork or the like, or it may be spread over that surface of the metallic disk that is to be in contact with the packing, or it may be carried by a layer of fibrous material that is to be interposed between the two disks, the metallic disk being then concentrically positioned in relation with and upon the packing, the entire closure being put, if necessary, under pressure and heated, whereby the cementing medium is coagulated, holding thus the metallic disk in place.

It should be noticed that in these closures an annular portion of the outer face of the packing adjacent its periphery is exposed, the remainder being covered by the metallic disk 15. The exposed portion, denoted in the drawings by the numeral 17, may vary, of course, according to the requirements, that is to say according to the thickness of the wall of the bottle neck.



It is obvious that, while herein a specified cementing medium has been described, others may just as well be used without departing from the spirit of the invention, which lies mainly in the provision of a metallic disk that covers a portion of the outer face of the packing of cork or the like of the closures, leaving an annular portion adjacent to the peripheral section of the packing exposed or uncovered.

The operation of the closure herein described is as follows: When the cap is secured to the neck of the bottle in the well known manner, the wall of the neck of the bottle is forced against the exposed annular portion of the packing, the metallic disk of the closure, being slightly larger than the inner diameter of the neck of the bottle, effectively prevents the tainting of the contents of the bottle, inasmuch as it prevents the contents from coming into contact with the packing. Inasmuch as, however, the wall of the bottle neck is pressed against the packing, the closures constructed in accordance with this invention retain the advantages of the ordinary and absolutely perfect crown corks or similar closures; that is to say they seal the bottle or other receptacle against escape of gaseous and liquid matter.

What I claim is:-

for a
1.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a ^{flat} disk of ductile metal cemented to the outer face of said sealing disk.

2.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a ^{flat} disk of ductile metal having a diameter that is smaller than that of said sealing disk cemented to the outer face of the latter.

Sub C!
3.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a ^{flat} disk of ductile metal having a diameter that is smaller than that of said sealing disk cemented to the outer face of the latter, said two disks being arranged concentrically.

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4.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a disk of ductile metal exterior to said sealing disk, said two disks being stuck together by an interposed cementing medium that is coagulated by heat.

5.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a disk of ductile metal exterior to said sealing disk, said two disks being stuck together by an interposed cementing medium that is coagulated and rendered insoluble by heat.

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6.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a disk of ductile metal exterior to said sealing disk, said two disks being stuck together by an interposed cementing medium consisting of a heat coagulated albuminous substance.

7.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a smaller disk of ductile metal exterior to said sealing disk, said two disks being stuck together by an interposed cementing medium that is coagulated by heat.

8.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a smaller disk of ductile metal exterior to and concentric with said sealing disk, said two disks being stuck together by an interposed cementing medium that is coagulated by heat.

9.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a smaller disk of ductile metal exterior to said sealing disk, said two disks being stuck together by an interposed cementing medium consisting of a heat coagulated albuminous substance.

10.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a disk of ductile metal exterior to and concentric with said sealing disk, said two disks being stuck together by an interposed cementing medium consisting of a heat coagulated albuminous substance.

Exhibit A-75

1038

Signed at New York, in the County of New York,
and State of New York, this 1st day of Sept. Oct. 7 A. D. 1914.

Inventor's Signature
Full Name

John Alberti

WITNESSES:

Sigmund Herzog
S. Birnbaum

Oath.

State of New York,
County of New York,

ss.:

JOHN ALBERTI,

petitioner, being duly sworn depose and say that he is a citizen of the United States,

and resident of the City of New York, County of Kings and State of New York, and that he verily believes himself to be the original, first, and sole inventor of the improvement in CLOSURES,

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application; or in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by him or his legal representatives or assigns more than twelve months prior to this application; and that no application for patent on said improvement has been filed by him or his representatives or assigns in any country foreign to the United States, ~~XXXXXXXXXXXX~~

Inventor's Full Name

John Alberti

Sworn to and subscribed before me, this 1st day of Sept. Oct. 7 A. D. 1914.

Sarah Birnbaum
Comm. of Deeds, New York City.

117.

Fig. 1.

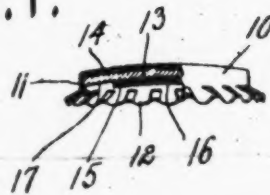


Fig. 2.

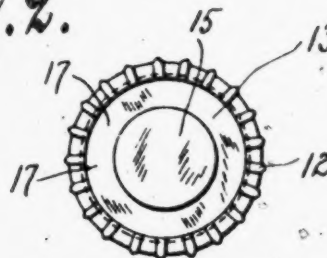
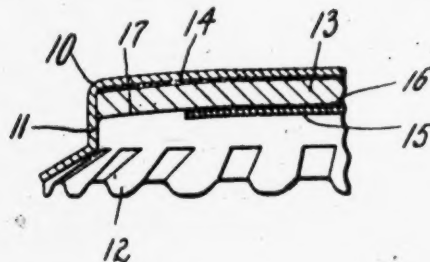


Fig. 3.



WITNESSES

Ch. Hane.
S. Birnbaum

INVENTOR
John Alberti
BY
Sigmund Herzog
his ATTORNEY

830
1040

Div. 40 Room 280

The Commissioner of Patents,
Washington, D. C.
and not any official by name.

M/W

© 1915

Form No. 2

Advertisement for the purpose of this
application is required and must be
filed with the application and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

Jan. 18, 1915.

Sigmund Herzog:

116 Nassau St.

New York, N. Y.

Please find below a communication from the EXAMINER in charge of the application of

John Alberti for Closures; filed Oct. 3, 1914; Serial No. 864,867.

Thomas Ewing

Claims 1, 2 and 3 are rejected on

American Cork and Seal Co. Fr. 415,794 of 1910 215-10
1 sheet.

To extend the disk 7 shown by American Cork and Seal Co. across
the cap would not require invention.

Claims 4 to 10, inclusive, are rejected on American
Cork and Seal Co., cited. The use of a heat coagulated albuminous
cement in lieu of the cement used by American Cork would not be
invention.

Attention is called to

Plinatus 225,223 June 15, 1909 xl25-80

and to applicant's allowed application which show the use of
albuminous cement.

Thomas Ewing
Examiner.

SIGMUND HERZOG
Patent Attorney and Consulting Engineer
MORTON BUILDING
116 NASSAU STREET
NEW YORK

#1409.



Division 40, Room 280.

Paper No. 3. *3/a*

IN THE UNITED STATES PATENT OFFICE.

In the matter of the application of

John Alberti.

for Letters Patent for Improvements in Closures.

Filed Oct. 3, 1914.

Ser. No. 864,867.

HONORABLE COMMISSIONER OF PATENTS,
WASHINGTON, D. C.

Sir:

This amendment is in response to Paper No. 2, Rejection, dated Jan. 18, 1915.

Claims 1 to 3, inclusive, lines 2; before "disk", second occurrence, insert flat.

The amended claims and also the others seem to be patentable over the references of record. Attention is called to the fact that each and every one of the claims calls for a disk of ductile material that is cemented to the sealing disk. This feature cannot be found in the French patent, of record, wherein a structure is disclosed in which a fairly rigid "disk" 8 is cemented to the inner face of the cap. This disk has a vertical rim 10, that is rigid enough to keep the rubber ring 7 in place.

It seems that applicant is the first one who ever attempted to attach the metallic disk to the sealing disk. The purpose of this arrangement is to ^{prevent} ~~prevent~~ the wrinkling of the metallic disk to obviate the difficulties heretofore

experienced with covered sealing disks. In the French patent of record the annular portion 11, in contact with the sealing disk, is not attached to the rubber gasket; in fact, it is clearly stated that this should not be done in order to form a shoulder in sealing the bottle. In other words, in the French device a result is sought, which applicant intends to avoid.

Claims 4 to 10, inclusive, have been rejected on the French reference in view of Plinatus, of record. It is thought that, since the French device does not anticipate applicant's claims, the combination of the two devices cannot bring about his structure. The same is true of applicant's allowed application.

Insert the following new claims:

11.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a disk of ductile metal stuck throughout its entire inner surface to the outer face of said sealing disk.

12.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a disk of ductile metal having a diameter that is smaller than that of said sealing disk stuck throughout its entire inner surface to the outer face of said sealing disk.

These claims are thought to be patentable over the ~~other~~ references in view of the argument made in connection with claims 1 to 10, inclusive.

Respectfully submitted,

John Alberti,

by

Sigmund Steiger
his attorney.

New York, N. Y., July 7, 1915.

1043

833

SIGMUND HERZOG
Patent Attorney and Consulting Engineer
MORTON BUILDING
116 NASSAU STREET
NEW YORK



JUL 15 1915

Paper No. 4.

Division 40, Room 280.

IN THE UNITED STATES PATENT OFFICE.

In the matter of the application of
John Alberti,
for Letters Patent for Improvements in Closures.

Filed Oct. 3, 1914.

Ser. No. 864,867.

HONORABLE COMMISSIONER OF PATENTS,
WASHINGTON, D. C.

Sir:

In addition to the amendment filed on or about July 7, 1915, applicant amends this case as follows:

Insert the following new claims:

13.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a thin disk stuck throughout its entire inner surface to the outer face of said sealing disk.

14.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein, and a thin disk having a diameter that is smaller than that of said sealing disk stuck throughout its entire inner surface to the outer face of said sealing disk.

It is thought that these claims are also patentable over the references cited in view of the arguments ^{presented} ~~made~~ in the paper abovementioned.

New York, N.Y., July 13, 1915.

Respectfully submitted,

J. Alberti,
by Sigmund Herzog
his attorney.

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Div. 40 Room 280

Address only
 "The Commissioner of Patents,
 Washington, D. C.,"
 and not any official by name.

M/V

2-360

Paper No. 5

All communications respecting this
 application should give the serial number,
 date of filing, title of invention, and
 name of the applicant.

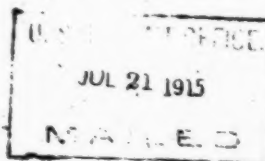
DEPARTMENT OF THE INTERIOR
 UNITED STATES PATENT OFFICE
 WASHINGTON

July 21, 1915.

Sigmund Herzog

116 Nassau St.

New York, N. Y.



Please find below a communication from the EXAMINER in charge of the application of

John Alberti for Closures: filed Oct. 3, 1914; Serial No.

864,867.

Thomas Ewing
 Commissioner of Patents

In response to amendment of July 14, 1915.

Claims 1, 2, 3, 11, 12, 13 and 14 are rejected on

Maccormack et al. Br. 26297 of 1909 215-10 1 sheet.

Claims 4 to 10, inclusive, are rejected on Maccormack, cited. The use of heat coagulated albuminous cement in lieu of the adhesive substance used by Maccormack cited would not involve invention. Moreover, the use of albuminous cement is old as shown by either Plinatus, 925,223, of record, or by applicant's allowed application.

Attention is called to

Edwards 854,201 May 21, 1907 215-10.

E. J. Hancock
 Examiner

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SIGMUND HERZOG
Patent Attorney and Consulting Engineer
MORTON BUILDING
116 NASSAU STREET
NEW YORK

1915

#1409

$$\frac{6}{2}$$

Division 40, Room 830.

Paper No. 6.

IN THE UNITED STATES PATENT OFFICE.

In the matter of the application of

John Alberti,

for Letters Patent for Improvements in Closures.

Filed Oct. 3, 1914.

Ser. No. 864,867.

HONORABLE COMMISSIONER OF PATENTS,
WASHINGTON, D. C.

Sir:

This amendment is in response to Paper No. 5, Rejection, dated July 21, 1915.

Cancel all the claims and substitute therefor:

C 1. A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of ductile metal having a diameter that is substantially smaller than that of said sealing disk but slightly larger than the inner diameter of the neck of the receptacle to which said closure is to be applied, said flat disk being cemented to the exposed face of said sealing disk.

2. A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of ductile metal exterior to said sealing disk, said flat disk having a diameter that is substantially smaller than that of said sealing disk but slightly larger than the inner diameter

of the neck of the receptacle to which said closure is to be applied, said two disks being stuck together by an interposed cementing medium that is coagulated and rendered insoluble by heat.

3. X A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of ductile metal exterior to said sealing disk, said flat disk having a diameter that is substantially smaller than that of said sealing disk but slightly larger than the inner diameter of the neck of the receptacle to which said closure is to be applied, said two disks being stuck together by an interposed cementing medium consisting of a heat coagulated albuminous substance.

4. X A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of ductile metal exterior to said sealing disk, said flat disk having a diameter that is substantially smaller than that of said sealing disk but slightly larger than the inner diameter of the neck of the receptacle to which said closure is to be applied, said two disks being stuck together by an interposed cementing medium that is coagulated by heat. *Sigs*

5.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of ductile metal exterior to said sealing disk, said two disks being stuck together by an interposed cementing medium that is coagulated by heat.

#1409

6.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of ductile metal exterior to said sealing disk, said two disks being stuck together by an interposed cementing medium that is coagulated and rendered insoluble by heat.

7.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk having a diameter that is substantially smaller than that of said sealing disk but slightly larger than the inner diameter of the neck of the receptacle to which said closure is to be applied, said flat disk being cemented to the exposed face of said sealing disk.

8.- A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk exterior to said sealing disk, said flat disk having a diameter that is substantially smaller than that of said sealing disk but slightly larger than the inner diameter of the neck of the receptacle to which said closure is to be applied, said two disks being stuck together by an interposed cementing medium that is coagulated and rendered insoluble by heat.

It is thought that the claims now presented are patentable over the references of record. It is to be observed that in the McCormack patent the sealing disk does not cover the entire head portion of the cap, nor is the thin foil of

#1409

diameter that is substantially smaller than that of said sealing disk. It is stated in the specification of this patent that the tin foil is first pasted or cemented to a wood pulp sheet, and the two elements stamped out together. From this it would appear that the diameter of the tin foil B is substantially the same as that of the wood pulp washer A. A wood pulp washer is specifically mentioned in the specification and preferable for the reason that, as stated therein, if moisture acts on the edge of the tin foil, it causes the wood pulp washer to swell and stop the leakage. If this happens, however, the contents of the bottle are apt to be contaminated. Applicant uses a sealing disk of cork or the like now generally employed for the purpose at hand, and cements to the exposed face thereof a thin disk of tin foil or the like, the arrangement being such that the disk of cork or the like covers the entire inner face of the head of the cap, and the flat disk of ductile metal or other material has a diameter that is substantially smaller than that of the sealing disk, but slightly larger than the inner diameter of the neck of the receptacle to which the closure is to be applied. By providing a sealing disk of cork or the like which covers the entire inner face of the head portion of the cap, a closure will be obtained which forms under all circumstances an airtight closure. This feature is absent in the McCormack device. By cementing the flat disk to the exposed face of the sealing disk and making it of a diameter that is slightly larger than the inner diameter of the neck of the receptacle to which the closure is to be applied, a contamination of the contents of the bottle is completely prevented. This feature is also absent from the McCormack structure. Let us suppose

that the neck of the bottle shown in the McCormack patent is not smooth and perfect. Obviously the closure will leak in such case, and not only will its contents come into contact with the metallic cap, but they will find their way through the crown cork for the simple reason that the bottle contacts with the inner face of the cap, and besides the thin foil B does not cover part of the neck, as in applicant's device.

In connection with this argument, applicant calls attention to pages 2 and 3 of his specification, which recite clearly the obstacles which he had to overcome in order to obviate the defects of the closures heretofore in use. Inasmuch as these defects are not removed in the devices shown in the several references of record, it is thought that the claims presented should be allowed over the said references.

As far as those claims are concerned which specify an albuminous substance, attention is called to the fact that in the Plinatus patent an albuminous packing material is mentioned, but nothing is stated therein to the effect or even hinted at that such packing material could be used as a cement. This reference should, therefore, be withdrawn.

It is thought that applicant's allowed application cannot be cited as a reference in view of the fact that it has not yet matured into a patent, and the Examiner is in no position to know whether it ever will result in one.

Attention has been called in the last Office action to the Edwards patent. A careful perusal of this patent reveals the fact that the device therein shown possesses all those defects which applicant has attempted to cure. More particularly its thin layer of ductile metal covers the entire face of the sealing disk and is open, therefore, to the objections mentioned in pages 1 and 2 of applicant's specification. Moreover, applicant admits that he was fully acquainted with this patent before his application was filed, and, in fact, the defects experienced with the device thereof have caused him to experiment and devise the closure forming the subject matter of this application.

Respectfully submitted,

John Alberts,

by

Lyman H. Herzog
his attorney.

840

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No. 140-280

Division of Patents,
Washington, D. C.
and any official name.

2-200

Paper No. 7

All communications respecting this
application should give the serial number,
date of filing, time of revision, and
name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE

WASHINGTON

Nov. 15, 1915.

Edmund Herzog

116 Nassau St.

NOV 15 1915

New York, N. Y.

John Alberti for Closures; filed Oct. 3, 1914; Serial No. 864,667.

Thomas Ewing
Assistant Commissioner

In response to amendment of Nov. 9, 1915.

Claims 1 and 7 are rejected on

Reuth Ir. 16075 of 1913 215-10 1 sheet.

Claims 2, 3, 4, 5, 6 and 8 are rejected on Reuth, cited,

in view of


La Porte 1,149,200 Aug. 10, 1915 x215-10

or in view of applicant's allowed application. (filed Aug. 2, 1913)

While applicant's allowed application has not gone to patent, it has been allowed by the Office. In the allowed application, applicant has claims for an albuminous cement. To substitute the above cement for another cement, in a structure old in the art, would not be a matter of invention.

23


E. S. Glascock
Examiner.



Re. U. S. Application for Letters Patent
for improvements in closures, filed by
John Alberti, Ser. No. 864,867.

Exhibit B.

This exhibit is identified in an
affidavit of Melcher Margen,
sworn to before me this 6th
day of Dec., 1915. Sarah Birnbaum
Comm. of Deeds # 1131
N. Y. City



Re. U. S. Application for Letters Patent for im-
provements in closures, filed by John
Alberti, Ser. No. 864,867.

Exhibit A.

This exhibit is identified in an affi-
davit of John Alberti, sworn to be-
fore me this 6th day of Dec., 1915.
Sarah Birnbaum
Comm. of Deeds
N. Y. City # 1131

1052

SIGMUND HERZOG
Patent Attorney and Consulting Engineer
MORTON BUILDING
116 NASSAU STREET
NEW YORK

#1409

JUL 10 1915

Division 40, Room 280.

Paper No. 8.

IN THE UNITED STATES PATENT OFFICE.

In the matter of the application of
John Alberti,

for Letters Patent for Improvements in Closures.

Filed Oct. 3, 1914.

Ser. No. 864,867.

HONORABLE COMMISSIONER OF PATENTS,
WASHINGTON, D. C.

Sir:

This is in response to Paper No. 7, Rejection,
dated Nov. 15, 1915.

Applicant files herewith two oaths, one of himself
and the other one of Melchor Marsa, showing the completion
of the invention in this country before the date of accept-
ance of British patent No. 16,075 of 1903. It is, there-
fore, respectfully requested that this reference be with-
drawn and the claims allowed.

Respectfully submitted,

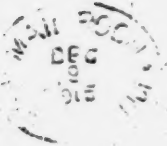
John Alberti

by *Sigmund Herzog*
his attorney.

New York, N. Y., Dec. 7, 1915.

843

1053



IN THE UNITED STATES PATENT OFFICE.

Div. 40, Room 230,
John Alberti,
Closures,
Filed Oct. 3, 1914,
Ser. No. 364,867.

State of New York, }
County of Kings, } SS

JOHN ALBERTI, being duly sworn, deposes and says that he is a resident of the City of New York, County of Kings and State of New York, and the applicant in the above entitled application for Letters Patent; that he made the invention set forth, claimed and disclosed in the specification and drawings, forming part of the above entitled application for Letters Patent; that he conceived the said invention, residing at that time in Brooklyn, N. Y., prior to the 9th day of July, 1914; that he completed the said invention prior to said date, to-wit: the 9th day of July, 1914, by constructing, making and completing a large number of closures in accordance with the said invention; that prior to the 9th day of July, 1914, he has exhibited some of said closures to several persons, among others to one, Melchor Marsa, of Brooklyn, N. Y.; that at the time of exhibiting said closures he has also explained the said invention to the said persons, including the said Marsa; and that the closures herewith filed and marked "Exhibit A" are some of the closures made and completed before the 9th day of July, 1914.

Deponent further says that he has read the accompanying affidavit of said Marsa, and that he believes the same true and correct.

Deponent further says that he does not know and does not believe that the said invention has been in public use or on sale in this country, or patented or described in a printed publication in this or any foreign country for more than two years prior to this application, and that he has never abandoned the invention.

John Alberti

Sworn and subscribed before me this 6th day of
Dec., 1915.

Sarah Birnbaum

Comm. of Deeds #1131, New York City.

IN THE UNITED STATES PATENT OFFICE.

Div. 40, Room 280,
John Alberti,
Closures,
Filed Oct. 3, 1914,
Ser. No. 864,867.

State of New York, }
County of Kings, } SS

MELCHOR MARSA, being duly sworn, deposes and says that he is a resident of the City of New York, County of Kings and State of New York, and engaged in the manufacture of bottle closures and other articles made wholly or partly of cork or similar substances: that he was prior to the 9th day of July, 1914 acquainted with John Alberti, the applicant in the above entitled application for Letters Patent; that the said Alberti has prior to the 9th day of July, 1914, explained to deponent the invention disclosed by the above named application and at the same time exhibited to deponent a number of bottle closures made in accordance therewith, one of said closures being hereto attached and marked "Exhibit B", said exhibit having been kept by deponent since.

Deponent further says that he has read the application papers of the above entitled application for Letters Patent, and that the closure marked "Exhibit B" is made in accordance with the invention described in said application.

Sworn to and subscribed before me this 6th day of Dec., 1915.

40 Room 280

Address to

The Commissioner of Patents,
Washington, D. C.

which will be filed by agent.

M/H

200

Paper No. 9

All communications in connection with this application should give the name of the applicant, the date of filing, title of invention, and name of the applicant.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

Dec. 16, 1915.

Sigmund Herzog

116 Nassau St.

New York, N. Y.

U. S. PATENT OFFICE

DEC 18 1915

MAILED

Please find below a communication from the EXAMINER in charge of the application of
John Albert for Closures; filed Oct. 3, 1914; Serial No. 864,867.

Thomas Ewing
Commissioner of Patents

In response to letter of Dec. 9, 1915.

Claims 5 and 6 are rejected on

Recht 796,356 Aug. 1, 1905 215-9

in view of Maccomack, Br., 26297, of record. While the cement
shown by Maccomack cited may not be coagulated by heat such as cement
is old as shown by either applicant's pending application or LaPorta
1,149,200, of record.

Claim 7 is rejected on either

Lindemeyr 603,108 Apr. 26, 1898 215-13
or Laurent Br. 6920 of 1887 215-9 1 sheet.

To cement the disks shown by either Lindemeyr or Laurent would
involve no invention.

Claim 8 is rejected on the references cited against
claim . . . The use of a cement coagulated by heat is shown by LaPorta
cited, or by applicant's pending application.

Claims 1, 2, 3 and 4 appear to be allowable.

Edm

E. J. Stewart
Commissioner

1057
847

SIGMUND HERZOG
Patent Attorney and Consulting Engineer
MORTON BUILDING
116 NASSAU STREET
NEW YORK

JAN
29

#1409

Division 40, Room 280.

Paper No. 10.

IN THE UNITED STATES PATENT OFFICE.

In the matter of the application of

John Alberti,

for Letters Patent for Improvements in Closures.

Filed Oct. 3, 1914.

Ser. No. 864,867.

HONORABLE COMMISSIONER OF PATENTS.
WASHINGTON, D. C.

Sir:

This amendment is in response to Paper No. 9, Rejection, dated Dec. 16, 1915.

At an interview which the attorney of record had with the Examiner in charge of this application on or about the 7th inst., it was pointed out by the Examiner that it would be advisable to add a new figure to the drawings showing a bottle closure applied to a bottle in order to bring out the fact that the disk of ductile metal has a diameter that is substantially smaller than that of a sealing disk, but slightly larger than the inner diameter of the neck of the receptacle to which the closure is applied.

Applicant herewith submits a sketch and asks permission to have the same added to the drawings.

The specification is amended as follows:

Page 4, line 3, cancel "and".

Same page, line 5, substitute a semi-colon (;) for the period (.), and insert after said semi-colon (;) and

Figure 4 is a similar section taken through a portion of the closure and a bottle to which it is applied.

Page 6, line 10, after "bottle" insert the numeral

20.

Cancel claims 5 to 8, inclusive.

Respectfully submitted,

John Alberti

by

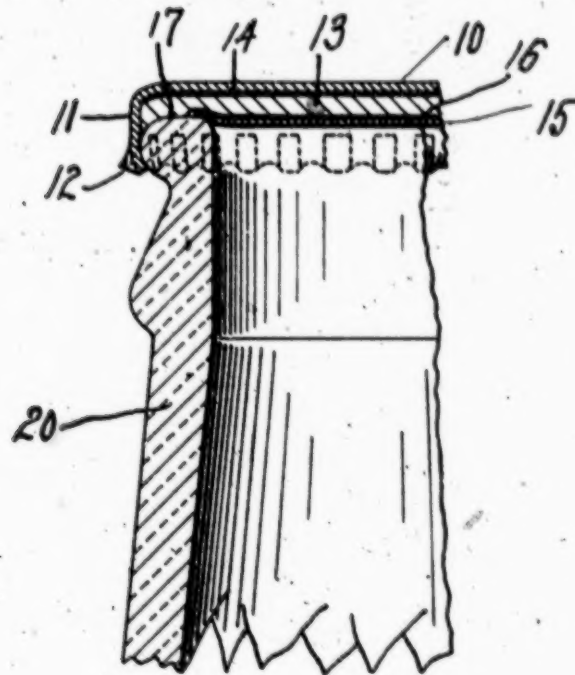
Signature
his attorney.

New York, N. Y., Jan. 28, 1916.

849
1059

Div. 40, Room 280, Filed Oct. 3, 1914.
John Alberti, Ser. No. 864,867
Closures,

Fig. 4.



New York, N. Y.
Jan. 28, 1916.

Signature
Attorney

850

1060

SIGMUND HERZOG

Patent Attorney and Consulting Engineer

MORTON BUILDING

116 NASSAU STREET

NEW YORK

FOR FILE FEB 8 1916

FEB 15 1916

Division 40, Room 280.

Paper No. 11.

IN THE UNITED STATES PATENT OFFICE.

In the matter of the application of

John Alberti,

for Letters Patent for Improvements in Closures.

Filed Oct. 3, 1914.

Ser. No. 864,867.

HONORABLE COMMISSIONER OF PATENTS,

WASHINGTON, D. C.

Sir:

The Office Draftsman is respectfully requested to add Figure 4 to the drawings, as per the hereto attached tracing. Please charge the cost of this correction to my account.

Very respectfully,

Sigmund Herzog

New York, N. Y., Jan. 28, 1916.

H. E. S. or

851
1061

ADDRESS ONLY
THE COMMISSIONER OF PATENTS,
WASHINGTON, D. C.

2-181

Serial No.

864,867

AM

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON Feb., 25, 1916

John Albert

Sir: Your APPLICATION for a patent for an IMPROVEMENT in
Closures

filed Oct. 3, 1914, has been examined and ALLOWED.

The final fee, TWENTY DOLLARS, must be paid not later than SIX MONTHS from the date of this present notice of allowance. If the final fee be not paid within that period, the patent on this application will be withheld, unless renewed with an additional fee of \$15, under the provisions of Section 4897, Revised Statutes.

The office delivers patents upon the day of their date, and on which their term begins to run. The printing, photolithographing, and engrossing of the several patent parts, preparatory to final signing and sealing, will require about four weeks, and such work will not be undertaken until after payment of the necessary fee.

When you send the final fee you will also send, DISTINCTLY AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE OF INVENTION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF ALLOWANCE (which is the date of this circular), DATE OF FILING, and, if assigned, the NAMES OF THE ASSIGNEES.

If you desire to have the patent issue to ASSIGNEES, an assignment containing a REQUEST to that effect, together with the FEE for recording the same, must be filed in this office on or before the date of payment of final fee.

After issue of the patent uncertified copies of the drawings and specifications may be purchased at the price of FIVE CENTS EACH. The money should accompany the order. Postage stamps will not be received.

Final fees will NOT be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

Respectfully,

Thomas Ewing
Commissioner of Patents.

Signmund Herzog

116 Nassau Street

New York N. Y.

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

UNCERTIFIED CHECKS WILL NOT BE ACCEPTED.

852

1062

PATENT, DESIGN, TRADE-MARK,
LABEL & COPYRIGHT PRACTICE
IN THE UNITED STATES &
FOREIGN COUNTRIES.

SIGMUND HERZOG.

Patent Attorney and Consulting Engineer.

116 NASSAU STREET.

TELEPHONE 5267 BEXMAN

CABLE ADDRESS:
"SIGHERZOG-NEW YORK"

NEW YORK, Oct. 2, 1914.

OCT 9 1914
Honorable Commissioner of Patents,
Washington, D. C.

Sir:

I herewith respectfully submit in the matter of the
application of John Alberti
of Brooklyn, N. Y. for Letters Patent
for improvements in Closures

the following:

Petition, specification and oath.

One (1) sheet of drawings, and

First government fee of fifteen (\$15) dollars per
check.

Very respectfully,

Sigmund Herzog

(Enclosures)

H/B

SIGMUND HERZOG

Patent Attorney and Consulting Engineer,

116 NASSAU STREET, NEW YORK.

MEMORANDUM

OF

FEE PAID AT UNITED STATES PATENT OFFICE.

Serial No. 864,867., 190.....

INVENTOR:

John Alberti,

PATENT TO BE ISSUED TO

International Cork Co.,

NAME OF INVENTION, AS ALLOWED:

Closures.

DATE OF PAYMENT:

August 23, 1916.

FEE:

\$20.00 ISSUE FEE.

DATE OF FILING:

Oct. 3, 1914.

DATE OF CIRCULAR OF ALLOWANCE:

FEB. 25, 1916.

The Commissioner of Patents will please apply the accompanying fee as indicated above.

SEND PATENT TO

SIGMUND HERZOG

116 NASSAU STREET

NEW YORK, N. Y.

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PAGE

1,199,026.

Patented Sept. 19, 1916

Fig. 1.

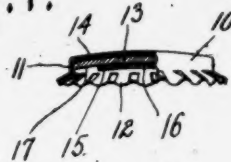


Fig. 2.

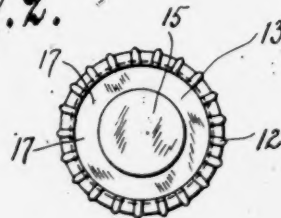


Fig. 3.

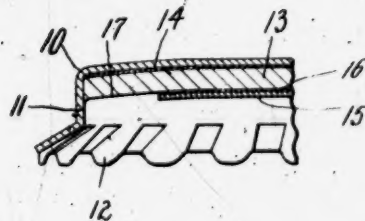
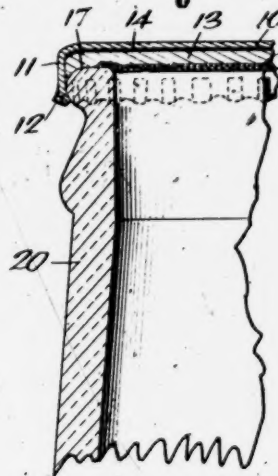


Fig. 4.



WITNESSES

Ch. Hane.
S. Birnbaum

INVENTOR

John Alberti
BY
Sigmund Herz
his ATTORNEY

UNITED STATES PATENT OFFICE. 855

JOHN ALBERTI, OF NEW YORK, N. Y., ASSIGNOR TO THE INTERNATIONAL CORK COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

CLOSURE.

1,199,026.

Specification of Letters Patent.

Patented Sept. 19, 1916.

Application filed October 3, 1914. Serial No. 864,867.

To all whom it may concern:

Be it known that I, JOHN ALBERTI, a citizen of the United States, and a resident of the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Closures, of which the following is a specification.

The present invention relates to closures or stoppers for bottles and other receptacles; more particularly it pertains to closures of the cap variety including those termed "crown corks." Closures of this type usually comprise a metallic cap or crown to be locked to the neck of the bottle, etc., and a sealing disk or packing of cork or the like, that is held within the cap, for instance, by means of a suitable sticking material.

It has been found in practice that in many cases it is impracticable to permit the liquid contents of the bottle or other receptacle to come into contact with the sealing disk of cork or like material, as some liquids, such as pure water, mineral water or beverages of delicate flavors, are apt to acquire a "corky" taste. The commercial value of such liquids is thus greatly impaired. In order to obviate this and similar defects of the crown corks and like closures, it has been proposed heretofore to cover the outer, that is to say the exposed faces of the sealing disks, with thin layers of pliable or ductile metal, such as chemically pure block tin, aluminium or alloys of tin. With the use of these closures, however, serious difficulties have been found, which prevent the same from becoming commercially successful. One of these defects consists in that the layer of metal is apt to wrinkle and, thus, to prevent the formation of an airtight seal. Moreover, the metal, owing to its inherent properties, cannot as readily conform to defects in the glass, or other materials of which the bottle or receptacle is made, as cork or like substances will do. The result is that the slightest defect in the neck of the receptacle prevents the formation of airtight seals with these closures. When it is taken into consideration that bottles, or like receptacles upon which crown corks or similar closures are used, are manufactured in great quantities and at the lowest possible cost, it will be obvious that little care can be taken in the manufacture thereof

to obtain smooth and perfect-necked articles, 55 and, inasmuch as the metal-covered closures of the type above described did not fulfil, as mentioned above, in conjunction with rough and imperfect bottle necks their purpose, it will be easily understood why the 60 commercial use of such closures could not be successful.

It is now one of the objects of the present invention to obviate the defects of the covered closures heretofore in use, that is to say 65 to obtain a closure which forms under all circumstances an airtight seal, yet prevents completely the contamination of the bottle contents.

With this and other objects in view, which 70 will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter fully described, pointed out in the appended claims 75 and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and details of construction within the scope of the appended claims 80 without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accom- 85 panying drawings, in which:—

Figure 1 is an elevation, partly in section, of a bottle closure constructed in accordance with the present invention; Fig. 2 is a bottom plan view thereof; Fig. 3 is a vertical 90 section taken through a portion of the closure on an enlarged scale; and Fig. 4 is a similar section taken through a portion of the closure and a bottle to which it is applied.

95 In the drawings, a bottle closure of the crown cork type has been shown for purposes of illustration, it being, however, obvious that the invention may be applied to any and all closures of the cap variety, the 100 forms of the metallic caps of the closures being immaterial as far as the invention is concerned, as will readily appear from the following description.

Referring now more particularly to the 105 drawings, the numeral 10 indicates a cap, comprising a substantially cylindrical head 11 and a corrugated flange 12, which is

adapted to be locked in the well known manner to the exterior of a bottle neck. This cap is made, as usual, of thin sheet iron coated with tin. In the cap is disposed a
 5 sealing disk or packing 13 of cork or like material, which is united with the cap, for instance by an interposed sticking material 14, or in any other suitable manner. To the
 10 outer, or in other words to the exposed face of the sealing disk, is attached concentrically with the latter a thin layer of tenacious or ductile metal, such as, for instance, chemically pure block tin, aluminium or an alloy of tin. This layer is made in the form of a
 15 disk, denoted by the numeral 15, its diameter being smaller than the diameter of the sealing disk 13, and being stuck to the latter by an interposed cementing medium, shown at 16. This cementing medium should,
 20 preferably, be of the type that is insoluble in liquids after it has set and formed a union between the packing and the metallic disk; it should be insoluble at normal temperature and also at temperatures above the
 25 normal. It has been found in practice that albumen is particularly adapted for use in connection with this invention, it being inodorous, tasteless, soluble in water and thus readily preparable for use. Moreover albumen
 30 coagulates easily and is rendered insoluble at about 140° Fahrenheit, the coagulation resulting in a firm union between the packing of the cork or the like and the metallic disk, such union being brought about
 35 almost instantaneously. In manufacturing these closures, the cementing medium is applied either to the exposed face of the sealing disk or packing of cork or the like, or it may be spread over that surface of the metallic
 40 disk that is to be in contact with the packing, or it may be carried by a layer of fibrous material that is to be interposed between the two disks, the metallic disk being then concentrically positioned in relation
 45 with and upon the packing, the entire closure being put, if necessary, under pressure and heated, whereby the cementing medium is coagulated, holding thus the metallic disk in place.
 50 It should be noticed that in these closures an annular portion of the outer face of the packing adjacent its periphery is exposed, the remainder being covered by the metallic disk 15. The exposed portion, denoted in the drawings by the numeral 17,
 55 may vary, of course, according to the requirements, that is to say according to the thickness of the wall of the bottle neck.

It is obvious that, while herein a specified
 60 cementing medium has been described, others may just as well be used without departing from the spirit of the invention, which lies mainly in the provision of a metallic disk that covers a portion of the outer face of the packing of cork or the like

of the closures, leaving an annular portion adjacent to the peripheral section of the packing exposed or uncovered.

The operation of the closure herein described is as follows: When the cap is secured to the neck of the bottle 20 in the well known manner, the wall of the neck of the bottle is forced against the exposed annular
 70 portion of the packing, the metallic disk of the closure, being slightly larger than the inner diameter of the neck of the bottle, effectively prevents the tainting of the contents of the bottle, inasmuch as it prevents
 75 the contents from coming into contact with the packing. Inasmuch as, however, the wall of the bottle neck is pressed against the packing, the closures constructed in accordance with this invention retain the advantages of the ordinary and absolutely
 80 perfect crown corks or similar closures; that is to say they seal the bottle or other receptacle against escape of gaseous and liquid matter.

What I claim is:—

1. A closure for receptacles comprising a
 90 metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of ductile metal having a diameter that is substantially smaller than that of said sealing
 95 disk but slightly larger than the inner diameter of the neck of the receptacle to which said closure is to be applied, said flat disk being cemented to the exposed face of said sealing disk.

2. A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of ductile metal exterior to said sealing disk,
 100 said flat disk having a diameter that is substantially smaller than that of said sealing disk but slightly larger than the inner diameter of the neck of the receptacle to which said closure is to be applied, said two disks being stuck together by an interposed cementing medium that is coagulated and rendered insoluble by heat.

3. A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of ductile metal exterior to said sealing disk,
 105 said flat disk having a diameter that is substantially smaller than that of said sealing disk but slightly larger than the inner diameter of the neck of the receptacle to which said closure is to be applied, said two disks being stuck together by an interposed cementing medium consisting of a heat coagulated albuminous substance.

4. A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of

1067

857

ductile metal exterior to said sealing disk,
said flat disk having a diameter that is sub-
stantially smaller than that of said sealing
disk but slightly larger than the inner diam-
eter of the neck of the receptacle to which
said closure is to be applied, said two disks
being stuck together by an interposed cem-
enting medium that is conglutated by heat.

Signed at New York, in the county of
New York, and State of New York, this 1st 10
day of Oct., A. D. 1914.

JOHN ALBERTI.

Witnesses:
SIGMUND HERZOG,
S. BIENBAUM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."

9-421

1914

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PAGE

[fol. 1068]

DEFENDANT'S EXHIBIT E

STATE OF NEW YORK,

County of New York, ss:

John Alberti, being first duly sworn, deposes and says:

I am the John Alberti who on October 3, 1914 filed an application for United States Letters Patent Serial No. 864867 which later resulted in Patent No. 1199026 dated September 19, 1916 for a closure.

I have been requested by the Crown Cork & Seal Company, Inc., which has acquired said patent, to examine my records to determine when I first conceived and first made specimen caps corresponding to the disclosure in said patent, i. e., caps of the crown type having on the cushion disc a face of lesser diameter than the cushion disc and adhesively united to the cushion disc, whether by albumen or any other adhesive. I have found no records bearing upon said subject matter or invention and am reasonably certain that there are none in my possession.

I have no distinct recollection of when I first conceived this invention nor any distinct recollection of when I first made the caps. I have read the affidavit which I filed in said application for patent but the same does not refresh my recollection, aside from the fact that I do recall that I first made caps of the nature referred to above and described in said patent some time in the spring of 1914. I know that it was subsequent to the completion of an addition to the plant of International Cork Company, said addition having been built on the east side of Sutton Street, Brooklyn, New [fol. 1069] York, opposite number 99 Sutton Street. This plant addition was built in the latter part of 1913 and finished, except for installation of machinery, very early in 1914. I distinctly recall that it was while we were installing assembling machines of the type known as the improved Bogdanffy machine, that I conceived the idea of utilizing a heat coagulable adhesive previously employed for sticking cushion discs in the metal shells to adhere a "center spot" facing to the cushion disc. This was in the late spring of 1914, but I have no way in which to fix the exact date. I have an impression that I conceived this idea some time in May, but so far as certainty is concerned, I can only say that it

was after the cold weather of the winter months (Jan., Feb. and Mar.) in 1914.

I have examined my records and have made the foregoing statement entirely without compensation, and of course with no promise of compensation of any kind. The composition cork and the crown cork business of my company, the International Cork Company, together with the patents and machinery, including the aforesaid patent, was purchased by the New Process Cork Company, and upon receiving said request I felt morally obligated to furnish all information in my possession, to the Crown Cork & Seal Company, Inc. which has, in turn, acquired said property.

Further deponent sayeth not.

John Alberti

Witnesses: Gertrude Kupferman, Jose R. Valdes.

[fol. 1070] Before the undersigned, a notary public in and for the State of New York, on this 6th day of March, 1934, personally appeared John Alberti to me known and known to me to be the person identified in and who signed the foregoing statement, and in my presence he read the same and acknowledged that the statements contained therein are true and that he executed the aforesaid paper of his own free will and for the reasons set forth.

Jean B. Calvin, Notary Public. Kings Co. Clk's No. 132, Reg. No. 4129. N. Y. Co. Clk's No. 228, Reg. No. 4-C-122. My Commission Expires March 30, 1934. (Seal.)

(Here follow 5 photos, side folios 1071-1075)

DEFENDANT'S EXHIBIT G

860A) 1071

PHONE, W HSBURG 2387

BROOKLYN, N. Y. November 1, 1924 1924

M. Ferdinand Gutmann & Co.

Brooklyn, N. Y.

TO BERTHOLD NAGY, DR.

MACHINE, TOOL AND DIE WORKS

ALL KINDS OF WELDING

BET. NOSTRAND AND MARCY AVENUES

777 MYRTLE AVENUE

Made two tin center dies
Extra charge for over-time
14 hours

• \$50	✓ 100 00	
• 75¢	✓ 10 50	
		110 50

OK CR

REC'D	
PRICE	
EXTEN	
ENTERED	NOV 13 1924
PAID	
CHECK NO	67210

67371

United States District Court

Eastern District of New York

Exhibit C in evidence (on 2)

PHONE, W HSBURG 2387

BROOKLYN, N. Y. Nov. 20, 1924

M. Ferdinand Gutmann & Co.

Brooklyn, N.Y.

TO BERTHOLD NAGY, DR.

MACHINE, TOOL AND DIE WORKS

ALL KINDS OF WELDING

BET. NOSTRAND AND MARCY AVENUES

777 MYRTLE AVENUE

Made a cutter attachment on tin center die,
regrinded tin center die and made new punch
38 hours • \$1.50

57 00

OK CR.

REC'D	
PRICE	
EXTEN	
ENTERED	NOV 21 1924
PAID	
CHECK NO	673100

Mese

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PAGE

DEFENDANT'S EXHIBIT H

CONFIRMATION OF SALE
BEECH-NUT FOIL CO.

Brooklyn, N. Y., Dec. 31, 1924.

To Ferdinand Gutmann & Co.,Bush Terminal Bldg. #19, B'klyn, N. Y.We confirm sale to you as follows: Your Order No. Letter 12-30-24 or Order No. 6811

Specifications

Strictly Pure Tin Foil, .0045" thick, in rolls 1-1/8" wide, core 1-9/32" in diameter.

Via Platform

to the above.

Quantity

8 Small Rolls.

Case Markings

B 1

Price

\$.6542 per lb.

Terms 2% 10 days. Delivery f. o. b. New York City.

NOTICE

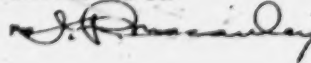
Seller is not to be accountable for delays in shipment or delivery if caused by strikes, floods, fires or any contingencies beyond seller's control. This acceptance is subject to approval of seller's credit department.

Salesman

Beech-Nut Foil Co.

Form 725 2-14 Rev. 10-23-24

J. CAGE

United States District Court
Eastern District of New York
Exhibit H in Case No. 75
Date Dec 31, 1924
Deputy Clerk

PURE TIN-FOIL
COMPOSITION FOIL
TEA LEAD
Plain or Inter-
in
Rolls or Sheets
Embossed or Printed
ELECTROTYPERS' FOIL

949

REMIT BY CHECK OR DRAFT ON
NEW YORK PAYABLE TO COM-
PANY AT CANAJOHARIE, N. Y.

FEB 21ST 1925

BEECH-NUT FOIL Co.

BUILDING 19, BUSH TERMINAL
BRONX, N. Y.

Consigned to

FERDINAND GUIMAN & CO
BUSH BUILDING #19
BROOKLYN N Y

WE, THE UNDERSIGNED, HEREBY GUARANTEE THAT THE ABOVE LISTED HEREIN WERE PRODUCED OR MANUFACTURED BY US IN A FACTORY IN WHICH WITHIN 30 DAYS PRIOR TO THE REMOVAL OF SUCH PRODUCT THEREFROM NO CHILDREN UNDER THE AGE OF 14 YEARS WERE EMPLOYED OR PERMITTED TO WORK NOR CHILDREN BETWEEN THE AGES OF 14 YEARS AND 16 YEARS EMPLOYED OR PERMITTED TO WORK MORE THAN 2000 HOURS IN ANY DAY OR MORE THAN SIX DAYS IN ANY WEEK, OR AFTER THE HOUR OF 7 P.M. LOCAL

ISSN 0013-788X/92/0005-0000\$10.00/0

Received 1-30-25

Your Order 1-30-25

Our Order No. 7069

Salesman J CAGE

Terms 2% 10 days or on arrival of goods as evidenced by destination freight bill attached to remittance.

Sold to SAME

Route via BEARER

F O B N Y CITY:

QUANTITY	DESCRIPTION	WEIGHT	PRICE	AMOUNT	TOTAL
	PURE 11N FOIL 1" WIDE	24.1 NEI	7260		17.61
229 5 ces					

1974

JRE TIN OIL
COMPOSITE FOIL
TEA LE
Plain or Int. sved.
in
Rolls or Sheets
Embossed or Printed
ELECTROTYPERS' FOIL

INVOICE

920

REMIT BY CHECK OR DRAFT ON
NEW YORK PAYABLE TO COM-
PANY AT CANAJONARIE, N. Y.
FEB 19 1925

WE, THE UNDERSIGNED, HEREBY GUARANTEE THAT THE ABOVE-RECEIVED OR ORDERED
LITHO PRINTING WORK WAS DONE OR REPRODUCED BY US OR A FACTORY IN WHICH ONLY
30 DAYS PRIOR TO THE REMOVAL OF SUCH PRINTING WORKSHOPS AND CHILDREN UNDER THE
AGE OF 14 YEARS WERE EMPLOYED OR PERMITTED TO WORK AND CHILDREN BETWEEN THE
AGE OF 14 YEARS AND 16 YEARS EMPLOYED OR PERMITTED TO WORK MORE THAN EIGHT
HOURS IN ANY DAY OR MORE THAN ONE DAY IN ANY WEEK, OR AFTER THE HOUR OF 7 P.M. OR
P.M. OR BEFORE THE HOUR OF 6 A.M. OR 6 P.M.

BEECH-NUT FOIL CO., CANAJONARIE, N. Y.

Received 1-30-25

Your Order 1-30-25

Our Order No. 7069

Salesman J CAGE

Terms 2 % 10 days or on arrival of
goods as evidenced by destination
freight bill attached to remittance.

Sold to SAME

BEECH-NUT FOIL CO.

BUILDING 19, BUSH TERMINAL
BROOKLYN, N. Y.

Consigned to

FERDINAND GUTMANN & CO
BUSH BLDG # 19
BROOKLYN N Y

Route via BEARER

F O B N Y CITY

QUANTITY	DESCRIPTION	WEIGHT	PRICE	AMOUNT	TOTAL
	PURE 11N FOIL 1" WIDE	34# NEI	7260		\$ 24.68 ✓

228
2
CRCB ✓

1113
1113

1075

PURE TIN FOIL
COMPOSITION FOIL
TEA LEAD
Plain or Interleaved,
in
Rolls or Sheets
Embossed or Printed
ELECTROTYPERS' FOIL

INVOICE

851

PERMIT BY CHECK OR DRAFT ON
NEW YORK PAYABLE TO COM-
PANY AT CANAJOHARIE, N. Y.
FEB 17 1925

WE, THE UNDERSIGNED, DO HEREBY GUARANTEE THAT THE ARTICLES OR COM-
MODITIES LISTED HEREIN WERE PRODUCED OR MANUFACTURED BY US IN A FACTORY IN WHICH
30 DAYS PRIOR TO THE REMOVAL OF SUCH PRODUCT THEREFROM NO CHILDREN UN-
DER THE AGE OF 14 YEARS WERE EMPLOYED OR PERMITTED TO WORK NOR CHILDREN BETWEEN
THE AGES OF 14 YEARS AND 16 YEARS EMPLOYED OR PERMITTED TO WORK MORE THAN
HOURS IN ANY DAY OR MORE THAN SIX DAYS IN ANY WEEK, OR AFTER THE HOUR OF 7
P. M. OR BEFORE THE HOUR OF 6 O'CLOCK A. M.

BEECH-NUT FOIL CO., CANAJOHARIE, N. Y.

Received 1-30-25
Your Order 1-30-25
Our Order No. 7069
Salesman J CAGE

Terms 2 % 10 days or on arrival
goods as evidenced by destination
freight bill attached to remittance.

Sold to SAME

BEECH-NUT FOIL CO.

BUILDING 19, BUSH TERMINAL
BROOKLYN, N. Y.

Consigned to

FERDINAND GUTMANN & CO
BUSH BLDG # 19
BROOKLYN N. Y.

Route via BEARER

F O B N Y CITY

QUANTITY	DESCRIPTION	WEIGHT	PRICE	AMOUNT	TOTAL
	PURE TIN FOIL 1" WIDE	26# NET	7260		\$ 18.6
<p>226 6 CAGE</p> <p>1123 69915</p>					

[fol. 1076] DEFENDANT'S EXHIBIT I

(Letterhead of)

Beech-Nut Foil Company,
Bush Terminal Building, 19,
Brooklyn, N. Y.

Jan. 17, 1925.

Ferdinand Gutmann & Co., Bush Bldg. #19, Brooklyn, N. Y.

Att. Mr. Benno Cohn

GENTLEMEN:

Parties unknown to us, and having no commercial rating will please send references or remit with order.

All agreements made contingent upon strikes, fires, accidents, or causes beyond our control.

Quotations are based on present market prices, manufacturing costs, etc., and are subject to immediate acceptance by you and confirmation by us.

This will acknowledge receipt of yours of Jan. 16th, relative to the gutta percha delivery to us.

Your comments have been noted, and whatever is left of this material after mounting on the foil will most certainly be returned.

Assuring you of our best attention to the matter, we are
Very truly yours, Beech-Nut Foil Co., J. P. Macauley,
Sales Department.

IPM/CW.

862

(Here follow 6 photos, side folios 1077-1082)

1078

CONFIRMATION OF SALE
BEECH-NUT FOIL CO.

Brooklyn, N. Y. Jan. 17, 1925.

To Ferdinand Gutmann & Company,

Bush Bldg. #19, B'klyn, N. Y.

We confirm sale to you as follows: Your Order No. Letter 1-16-25 Our Order No. 6936

Specifications Strictly Pure Tin Foil, mounted on guttapercha, interleaved with wax paper, .003" thick, in rolls 1" wide, core 1-9/32" in diameter

Routing Via Platform to the above.

Quantity 100 Lbs.

Case Markings B 1

Price \$.7260 per lb.

Terms 2% 10 days. Delivery f. o. b. New York City.

NOTICE } Seller is not to be accountable for delays in shipment or delivery if caused by strikes, floods, fires or any contingencies beyond seller's control. This acceptance is subject to approval of seller's credit department.

Salesman

J. CAGE.

Beech-Nut Foil Co.

Per

Form 723 124 Date 10-25-24

J. R. Macaulay

8620

1079

PURE TIN FOIL
COMPOSITION FOIL
TEA LEAD
Plain or Interleaved
in
Rolls or Sheets
Embossed or Printed
ELECTROTYPERS' FOIL

INVOICE

REMIT BY CHECK OR DRAFT ON
NEW YORK PAYABLE TO COM-
PANY AT CANAJOHARIE, N. Y.
FEB 5 1925

WE, THE UNDERSIGNED, DO HEREBY GUARANTEE THAT THE ARTICLES OR GOODS LISTED HEREIN WERE PRODUCED OR MANUFACTURED BY US IN A FACTORY IN WHICH 60 DAYS PRIOR TO THE REMOVAL OF SUCH PRODUCT THEREFROM NO CHILDREN UNDER THE AGE OF 14 YEARS WERE EMPLOYED OR PERMITTED TO WORK NOR CHILDREN BETWEEN THE AGES OF 14 YEARS AND 18 YEARS EMPLOYED OR PERMITTED TO WORK MORE THAN EIGHT HOURS IN ANY DAY OR MORE THAN SIX DAYS IN ANY WEEK, OR AFTER THE HOUR OF 7 O'CLOCK P. M. OR BEFORE THE HOUR OF 6 O'CLOCK A. M.

BEECH-NUT FOIL CO., CANAJOHARIE, N. Y.

Received 1-30-25
Your Order 1-30-25
Our Order No. 7069
Salesman J CAGE
Terms 2% 10 days or on arrival of
goods as evidenced by destination
freight bill attached to remittance.
Sold to SAME

BEECH-NUT FOIL CO.

BUILDING 19, BUSH TERMINAL
BROOKLYN, N. Y.

Consigned to

FERDINAND GUTMANN & CO
BUSH BLDG # 19
BROOKLYN N. Y.

Route via BEARER

FOB N Y CITY

QUANTITY	DESCRIPTION	WEIGHT	PRICE	AMOUNT	TOTAL
1	CASE MID PURE TIN FOIL 1" CASE MARKED C 1	111# NET	7260		80.59

REC'D

PRICE

EXTEN

ENTERED

PAID

CHECK NO.

FEB 9 1925

68910

221
1
CRB

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PAGE

862D

1080

PURE TIN FOIL
COMPOSITION FOIL
TEA LEAD
Plain or Interleaved
in
Rolls or Sheets
Embossed or Printed
ELECTROTYPERS' FOIL

INVOICE

734
REMIT BY CHECK OR DRAFT ON
NEW YORK PAYABLE TO COM-
PANY AT CANAJOHARIE, N. Y.

FEB 5 1925

WE THE UNDERSIGNED DO HEREBY GUARANTEE THAT THE ARTICLES OR COMMODITIES LISTED HEREIN WERE PRODUCED OR MANUFACTURED BY USING A FACTORY IN WHICH WITHIN 90 DAYS PRIOR TO THE REMOVAL OF SUCH PRODUCT THEREFROM NO CHILDREN UNDER THE AGE OF 14 YEARS WERE EMPLOYED OR PERMITTED TO WORK NOR CHILDREN BETWEEN THE AGE OF 14 YEARS AND 16 YEARS EMPLOYED OR PERMITTED TO WORK MORE THAN EIGHT HOURS IN ANY DAY OR MORE THAN SIX DAYS IN ANY WEEK, OR AFTER THE HOUR OF 7 O'CLOCK P. M. OR BEFORE THE HOUR OF 5 O'CLOCK A. M.

BEECH-NUT FOIL CO., CANAJOHARIE, N. Y.

Received 1-30-25

Your Order 1-30-25

Our Order No. 7069

Salesman J CAGE

Terms 2% 10 days or on arrival of
goods as evidenced by destination
freight bill attached to remittance.

Sold to SAME

BEECH-NUT FOIL CO.

BUILDING 19, BUSH TERMINAL
BROOKLYN, N. Y.

Consigned to

FERDINAND GUTMANN & CO
BUSH BLDG # 19
BROOKLYN N Y

Route via BEARER

F O B N Y C I T Y

PURE TIN FOIL 1" WIDE
SHIPPED 2-4-25

502# NET

7260

\$ 36.84

REC'D _____
PRICE _____
EXTN. _____
ENTERED 9181
PAID FEB 9 1925
CHECK # 68910

220
H

BLANK

PAGE

862E

1081

DEFENDANT'S EXHIBIT K

CONFIRMATION OF SALE
BEECH-NUT FOIL CO.

Brooklyn, N. Y., Jan. 30, 1925.

To Ferdinand Gutmann & Co.,Bush Bldg. #19, B'klyn, N. Y.We confirm sale to you as follows: Your Order No. 1-30-25 Our Order No. 7069Specifications Strictly Pure Tin Foil, .0045" thick, mounted on gutta
percha, interleaved with heavy waxed paper, in rolls 1" wide, core
1 1/2" in diameter.

Via Platform to the above.

Quantity 250 Lbs.

Price \$.7260 per lb.

Terms 2% 10 days. Delivery f. o. b. New York City.

Case Markings C 1

Guttapercha to be furnished
by customer.

NOTICE { Seller is not to be accountable for delays in shipment or delivery if caused by strikes, floods, fires or any contingencies
beyond seller's control. This acceptance is subject to approval of seller's credit department.

Salesman

J. GAGE

Beech-Nut Foil Co.

Per *J. H. Massey*

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PAGE

862F

1082

PURE TIN FOIL
COMPOSITION FOIL
TEA LEAD
Plain or Interleaved
in
Rolls or Sheets
Embossed or Printed
ELECTROTYPERS' FOIL

INVOICE

538

REMIT BY CHECK OR DRAFT ON
NEW YORK PAYABLE TO COM-
PANY AT CANAJOHARIE, N. Y.
JAN 19 1925

WE, THE UNDERSIGNED, DO HEREBY GUARANTEE THAT THE ARTICLES OR COMMODITIES LISTED HEREIN WERE PRODUCED MANUFACTURED BY USING A FACTORY IN WHICH WITHIN 90 DAYS PRIOR TO THE REMOVAL OF EACH PRODUCT THEREFROM NO CHILDREN UNDER THE AGE OF 14 YEARS WERE EMPLOYED OR PERMITTED TO WORK NOR CHILDREN BETWEEN THE AGES OF 14 YEARS AND 16 YEARS EMPLOYED OR PERMITTED TO WORK MORE THAN EIGHT HOURS IN ANY DAY OR MORE THAN SIX DAYS IN ANY WEEK, OR AFTER THE HOUR OF 7 O'CLOCK P. M. OR BEFORE THE HOUR OF 5 O'CLOCK A. M.

BEECH-NUT FOIL CO., CANAJOHARIE, N. Y.

Received 12-31-24

Your Order LEI 12-30-24

Our Order No. 6811

Salesman J CAGE

Terms 2 % 10 days or on arrival of
goods as evidenced by destination
freight bill attached to remittance.

Sold to SAME

BEECH-NUT FOIL CO.

BUILDING 19, BUSH TERMINAL
BROOKLYN, N. Y.

Consigned to

FERDINAND GUTMANN & CO
BUSH BLDG # 19
BROOKLYN N Y

Route via MESSENGER

F O B N Y CITY

QUANTITY	DESCRIPTION	WEIGHT	PRICE	TOTAL
1	PKGE PURE TIN FOIL 1" WIDE SHIPPED 1-13-25	14# NET	7196	\$ 10.07
<p>REC'D PRICE EXTEN ENTERED PAID CHECK NO</p> <p>204 1 CRB</p> <p>JAN 30 1925 68659</p>				

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PAGE

[fol. 1083]

DEFENDANT'S EXHIBIT L

(Letterhead of)

Reynolds Metals Company, Incorporated

General Offices, Louisville, Ky.

This Letter Written From New York Branch, 110 Bridge
St., Brooklyn, N. Y.

January 24, 1929.

Ferdinand Gutmann Company, Bush Building #19,
Brooklyn, New York.

All agreements contingent upon strikes, fires, accidents,
or causes beyond our control.

Attention Mr. Cohn, Please

GENTLEMEN:

Confirming my visit to your office recently, regarding the
matter of mounting aluminum foil to Gutta Percha, I quote
you from letter received from Louisville in this matter,
which is self-explanatory.

"We have been experimenting for sometime with the
mounting of Aluminum Foil to Gutta Percha and have finally
succeeded in doing this satisfactorily.

With this letter we are sending you a few sheets of
Aluminum Foil that has been mounted solid to Gutta Percha.
This is a .0025" gauge Aluminum and the net yield of this
[fol. 1084] foil with the Gutta Percha mounting is 2666
square inches per pound.

The sample you sent us with your letter is .002" gauge
Aluminum and the net yield of this foil with Gutta Percha
mounting is 3044 square inches per pound.

On .002 gauge Aluminum Foil, solid mounted to Gutta
Percha, you can quote the customer as follows:

1000 pounds	\$.839 a pound
500 pounds	.889 a pound
250 pounds	.949 a pound
100 pounds	1.049 a pound

Of course these prices are more or less estimates because
we have not had experience in the manufacture of this foil
upon which to base figures. Therefore, it may be necessary
in the future to make a readjustment of these prices.

864

While you are looking this over, I am asking Louisville what happened to the samples they claim they were sending.

Very truly yours, Reynolds Metals Co. Inc., (Signed)
J. Cage, James Cage.

JC:M.

[fol. 1085]

(Letterhead of)

Reynolds Metals Company, Incorporated

General Offices, Louisville, Ky.

This Letter Written From New York Branch, 110 Bridge St., Brooklyn, N. Y.

January 30, 1929.

Subject: Gutta Percha Samples

All agreements contingent upon strikes, fires, accidents, or causes beyond our control.

Ferdinand Guttman & Co., Bush Building #19, Brooklyn, New York.

Attention Mr. B. Cohen, Please

GENTLEMEN:

This confirms mailing to you last night of samples of foil mounted on Gutta Percha, which we trust will meet with your approval.

Awaiting your further advice, we are

Very truly yours, Reynolds Metals Co. Inc., (Signed)
James Cage.

JC:M.

[fol. 1086]

DEFENDANT'S EXHIBIT M

(Letterhead of)

Reynolds Metals Company, Incorporated

United States Foil Division, Louisville, Ky., U. S. A.

This Letter Written From New York Branch, 212 Fifth
Ave., New York, New York.

March 12, 1929.

Ferdinand Gutmann Co., Bush Terminal Bldg. #19, Brook-
lyn, New York.

Attention Mr. B. Cohen—Please

GENTLEMEN:

In regard to your appreciated order for 100 pounds of
gutta percha mounted Aluminum, we only had enough
gutta percha to mount about 20 pounds, and are shipping
you this quantity.

This will be enough, I believe, for you to look over, and
we shall await further instructions before proceeding with
the manufacture of the remainder, or a larger order.

Very truly yours, Reynolds Metals Co., Inc., (Signed)
James Cage.

JC:M.

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PAGE

866

1087

DEFENDANT'S EXHIBIT N

REYNOLD METALS CO
UNITED STATES FOIL COMPANY
 INCORPORATED
 LOUISVILLE, KY.

CABLE AD-
 CL
 WEST
 LIEBLER

"FOILWAX"
 ED
 NICH
 A. S. C.

INVOICE NO. 7895
 DATE 8/20/29
 SHIPPED TO
 SHIPPED FROM
 F. O. B.
 TERMS NET 30 DAYS
 SHIPPED VIA EXP COLLECT CAR

P. O. NO. K 2956

FOR CUSTOMER'S USE

TERMS

F. O. B.

ACCOUNT

APPROVAL

TRANSPORTATION

RECEIVAL

CALCULATIONS

ADJUSTMENT

AUDITED

SOLD
 TO

FERDINAND GUTMANN COMPANY
 BUSH TERMINAL BLDG
 BROOKLYN N Y

YOUR ORDER NO.

SALES NO. CAGE

DISCOUNT AMOUNTING TO 1
 WILL BE ALLOWED IF PAYMENT IS
 RECEIVED BY US ON OR BEFORE
 WILL NOT BE ALLOWED THEREAFTER

NET

NO. CASES

Our responsibility for safe delivery of goods ceases when we obtain
 Railroad Receipt in good order.

ON ALP41

"CORRECTED INVOICE"

United States District Court

Eastern District of New York

Exhibit 11 in evidence

Date Nov 7, 31

Clerk
 Deputy Clerk

AMOUNT

PLAIN ALUMINUM FOIL

SIZE 1" ROLLS

204 1/2#

5015

102 56

42 IRON CORES

03 EA

1 26

103 82

LESS EXPRESS ALLOWED ON 250# ROLLS AT 3 80 CWT

9 84

93 98

L8

THIS INVOICE IS ISSUED TO CORRECT OUR
 ORIGINAL INVOICE # 7895 DATED 8/20/29
 PLEASE MAKE YOUR REMITTANCE ON THE CORRECTED
 AMOUNT

PLAIN OR PRINTED ALUMINUM, PURE TIN AND COMPOSITION ROLLS - MASTER METAL WRAPPERS, CARTONS AND NOVELTIES.

EVL

ENTER

PMD

CHECK NO.

SEP 20 1929

11421

867

1088

REYNOLDS METALS CO

UNITED STATES FOIL COMPANY

INCORPORATED

LOUISVILLE, KY.

CABLE ADDRESS "FOILWAX"
CODES USED
WESTERN UNION
LIEBLERS AND A. B. C.INVOICE NO. 7695
DATE 8/20/29

P. O. NO. 2956

SHIPPED TO
SHIPPED FROM
F. O. B.TERMS NET 30 DAYS
SHIPPED VIA EXP COLLECT

CAR

SOLD
TOFERDINAND GUTMANN CO
BUSH TERMINAL BLDG
BROOKLYN N Y

FOR CUSTOMER'S USE

TERMS

F. O. B.

ACCOUNT

APPROVAL

TRANSPORTATION

RECEIVAL

CALCULATIONS

ADJUSTMENT

AUDITED

YOUR ORDER NO.

SALES NO. CAGE

DISCOUNT AMOUNTING TO \$
WILL BE ALLOWED IF PAYMENT IS
RECEIVED BY US ON OR BEFORE
WILL NOT BE ALLOWED THEREAFTER

NET

NO. CASES	Our responsibility for safe delivery of goods cannot when we obtain Railroad Receipt in good order.	PRICE	AMOUNT
3	30 ALP41		
	PLAIN ALUMINUM FOIL		
	SIZE 1" ROLLS	204 1/2#	5015
	42 IRON CORES	03 EA	102 56
			1 26
			103 82
	LESS FREIGHT ALLOWED ON 250# GROSS AT 1 1/4 CWT		3 06
LB			100 76

PLAIN OR PRINTED ALUMINUM, PURE TIN AND COMPOSITION FOILS—MASTER METAL WRAPPERS, CARTONS AND NOVELTIES

H/S

868

1089

Bill Order No. K 2956Shipping Report No. 1409

UNIFORM EXPRESS RECEIPT

RAILWAY EXPRESS AGENCY

EXPRESS COMPANY

NON-NEGOTIABLE RECEIPT

Louisville, Ky. 8/20/29 192

Received from Reynolds Metals Co., Inc., Louisville, Ky. subject to the classification and tariffs in effect on the date hereof, the property herein and after described; and "Subject to the terms and conditions of the Uniform Express Receipt prescribed by the Interstate Commerce Commission, and in effect on the date of shipment."

Value herein stated and warranted by shipper to be Value not to exceed 50¢ per pound Dollars.

Consigned to FERDINAND GUTMANN CO., BUSH TERMINAL BLDG.

Destination BROOKLYN State of N. Y. County of

No. Packages	DESCRIPTION of ARTICLES and SPECIAL MARKS	WEIGHT Subject to Car or Rate Column	Class	Check Rate Column	AMOUNT
3 BXS.	FLAIN ALUMINUM FOIL	WTS			C. O. D. \$
					Charges COLLECT
					Amount if Prepaid

which, the Company agrees to carry upon the terms and conditions printed on the back hereof, to which the shipper agrees, and as evidence thereof, accepts and signs this receipt.

REYNOLDS METALS CO., Inc., Shipper
H.O.T.

Per

For the Company

NOTE—The Company's charge is based upon the character of the property, of which its value is an element, and its value must be declared in writing by the shipper unless its character is otherwise disclosed. When goods are hidden from view by wrapping, boxing or other means and the Company is not notified of the character thereof, the shipper's declaration of value may be made by notation, "not exceeding \$50.00" or "not exceeding \$50.00 or 50 cents per pound, actual weight."

869

1090

REYNOLDS METALS CO
UNITED STATES FOIL COMPANY
INCORPORATED
LOUISVILLE, KY.

CABLE ADDRESS "FOILWAX"
 CODES USED
 WESTERN UNION
 LIEBLER AND A. S. C.

INVOICE NO. 6193
 DATE 7/27/29 P. O. NO. K 1806
 SHIPPED TO SAME
 F. O. B.
 TERMS NET CASH 30 DAYS
 SHIPPED VIA UNLY COLLECT CAR

FOR CUSTOMER'S USE

TERMS

F. O. B.

ACCOUNT

APPROVAL

TRANSPORTATION

RECEIVAL

CALCULATIONS

ADJUSTMENT

AUDITED

SOLD
TO

FERDINAND GUTMANN CO
 #19 BUSH TERMINAL BLDG
 BROOKLYN N Y

YOUR ORDER NO.

SALES NO. CAGE MAIL

DISCOUNT AMOUNTING TO 3 NET

WILL BE ALLOWED IF PAYMENT IS
 RECEIVED BY US ON OR BEFORE
 WILL NOT BE ALLOWED THEREAFTER

NO. CASES	Our responsibility for safe delivery of goods cannot when we obtain Railroad Receipt in good order.	PRICE	AMOUNT
	— MS ALP41		
3	PLAIN ALUMINUM FOIL UNMOUNTED SIZE 1" WIDE 44 ROLLS 229 1/2" LESS FRT ON 285# GROSS AT 1 18 CWT	5015	115 09 3 36
BHV			111 73

REC'D

PRICE

B. L. H.

ENTERED

A. D.

PLAIN OR PRINTED ALUMINUM, PURE TIN AND COMPOSITION FOILS - MASTER METAL WRAPPERS, CARTONS AND NOVELTIES.

870

1091

REYNOLDS METALS CO
UNITED STATES FOIL COMPANY
 INCORPORATED
 LOUISVILLE, KY.

34

INVOICE NO. 6219
 DATE 7/27/29
 SHIPPED TO SAME
 SHIPPED FROM
 F. O. B.
 TERMS
 SHIPPED VIA

P. O. NO. K 2936

NET CASH 30 DAYS
 ONLY COLLECT CAR

CABLE ADDRESS "FOILWAX"
 CODES USED
 WESTERN UNION
 LIEBLERS AND A. B. C.

FOR CUSTOMER'S USE

TERMS
 F. O. B.
 ACCOUNT
 APPROVAL
 TRANSPORTATION
 RECEIVAL
 CALCULATIONS
 ADJUSTMENT
 AUDITED

SOLD
 TO

FERDINAND GUTMANCO
 #19 BUSH TERMINAL BLDG
 BROOKLYN N Y

YOUR ORDER NO.

SALES NO. CAGE

DISCOUNT AMOUNTING TO \$ NET
 WILL BE ALLOWED IF PAYMENT IS
 RECEIVED BY US ON OR BEFORE
 WILL NOT BE ALLOWED THEREAFTER

NO. CASES

Our responsibility for safe delivery of goods ceases when we obtain
 Railroad Receipt in good order.

PRICE

AMOUNT

— MS ALP41

5

PLAIN ALUMINUM FOIL UNMOUNTED
 SIZE 1" 102 ROLLS 530 1/2"
 LESS FRT ON 635# GROSS AT 1 LB CWT

3015

266 05

7 42

258 56

BHV

B. L. 900
 AUG 27 1929
 AUG 27 1929
 18223

PLAIN OR PRINTED ALUMINUM, PURE TIN AND COMPOSITION FOILS — MASTER METAL WRAPPERS, CARTONS AND NOVELTIES.

871

1092

REYNOLDS METALS CO
UNITED STATES FOIL COMPANY
 INCORPORATED
 LOUISVILLE, KY.

CABLE ADDRESS "FOILWAX"
 CODES USED
 WESTERN UNION
 LIEBLERS AND A. B. C.

INVOICE NO. 6111
 DATE 7/26/29
 SHIPPED TO
 SHIPPED FROM
 F. O. B.
 TERMS
 SHIPPED VIA

P. O. NO. K 1806

NET CASH 30 DAYS
 EXP COLLECT CAR

FOR CUSTOMER'S USE

TERMS

F. O. B.

ACCOUNT

APPROVAL

TRANSPORTATION

RECEIVAL

CALCULATIONS

ADJUSTMENT

AUDITED

OLD
 TO

FERDINAND GUTMANN CO
 #19 BUSH TERMINAL BLDG
 BROOKLYN N Y

YOUR ORDER NO.

SALES NO. CAGE MAIL

DISCOUNT AMOUNTING TO \$ NET
 WILL BE ALLOWED IF PAYMENT IS
 RECEIVED BY US ON OR BEFORE
 WILL NOT BE ALLOWED THEREAFTER

NO. CASES	Our responsibility for safe delivery of goods ceases when we obtain Railroad Receipt in good order.	PRICE	AMOUNT
	— MS ALP41		
4	PLAIN ALUMINUM FOIL UNMOUNTED SIZE 1" WIDE 64 ROLLS 341# LESS EXPRESS ON 415# GROSS AT 3 80 CWT	5015	171 01 15 77
BHY			155 24

PLAIN OR PRINTED ALUMINUM, PURE TIN AND COMPOSITION FOILS — MASTER METAL WRAPPERS, CARTONS AND NOVELTIES

872

1093

REYNOLDS METALS COMPANY
UNITED STATES FOIL COMPANY
INCORPORATED
 LOUISVILLE, KY.

CABLE ADDRESS "FOILWAX"
 CODES USED
 WESTERN UNION
 LIEBLERS AND A. B. C.

INVOICE NO. 4134
 DATE 6/27/29

P. O. NO. K 1806

SHIPPED TO
 SHIPPED FROM

F. O. B.

TERMS

SHIPPED VIA

NET 30 DAYS

ONLY COLLECT

CAR

FOR CUSTOMER'S USE

TERMS

F. O. B.

ACCOUNT

APPROVAL

TRANSPORTATION

RECEIVAL

CALCULATIONS

ADJUSTMENT

AUDITED

SOLD
 TO

FERDINAND GUTMANN CO
 BUSH TERMINAL BLDG# 19
 BROOKLYN N Y

YOUR ORDER NO.

SALES NO. CAGE M

DISCOUNT AMOUNTING TO \$
 WILL BE ALLOWED IF PAYMENT IS
 RECEIVED BY US ON OR BEFORE
 WILL NOT BE ALLOWED THEREAFTER

NET

NO. CASES	Our responsibility for safe delivery of goods ceases when we obtain Railroad Receipt in good order.	PRICE	AMOUNT
1	MS ALP41 PLAIN ALUMINUM FOIL SIZE 26 3/4" 62 1/2" 82# GROSS WT	5015	31 34
<p>REC'D 6/27/29 JH/Sug</p> <p>PRICE</p> <p>EXTEN.</p> <p>AMOUNT</p> <p>DATE 7/31/29</p> <p>78.029</p> <p>LS not taken in inventory</p>			

PLAIN OR PRINTED ALUMINUM, PURE TIN AND COMPOSITION FOILS— MASTER METAL WRAPPERS, CARTONS AND NOVELTIES.

873

1094

REYNOLDS METALS CO
UNITED STATES FOIL COMPANY

INCORPORATED

LOUISVILLE, KY.

CABLE ADDRESS "FOILWAX"
 CODES USED
 WESTERN UNION
 LIEBOWITZ AND A. S. C.

INVOICE NO. 4088
 DATE 6/26/29

P. O. NO. K/M 1806

SHIPPED TO

SHIPPED FROM

F. O. B.

TERMS

SHIPPED VIA

NET 30 DAYS
 UNIV COLLECT

CAR

FOR CUSTOMER'S USE

TERMS

F. O. B.

ACCOUNT

APPROVAL

TRANSPORTATION

RECEIVAL

CALCULATIONS

ADJUSTMENT

AUDITED

SOLD
 TO

FERDINAND GUTMANN COMPANY
 BUSH TERMINAL BLDG #19
 BROOKLYN N Y

YOUR ORDER NO.

SALES NO. CAGE M

DISCOUNT AMOUNTING TO \$
 WILL BE ALLOWED IF PAYMENT IS
 RECEIVED BY US ON OR BEFORE

NET

WILL NOT BE ALLOWED THEREAFTER

NO. CASES	Our responsibility for safe delivery of goods ceases when we obtain Railroad Receipt in good order.	PRICE	AMOUNT	
	— MS ALP41			
10	PLAIN ALUMINUM FOIL			
	SIZE 1" 1115#	5015	559 17	
	LESS FRT ON 1335# GROSS AT 1 18 CWT		15 75	543 42
LB				

PLAIN OR PRINTED ALUMINUM, PURE TIN AND COMPOSITION FOILS—MASTER METAL WRAPPERS, CARTONS AND NOVELTIES.

874

1095

REYNOLDS METALSCO
UNITED STATES FOIL COMPANY
INCORPORATED
LOUISVILLE, KY.

CABLE ADDRESS "FOILWAX"
 CODES USED
 WESTERN UNION
 LIEBLERS AND A. S. C.

INVOICE NO. 6347
 DATE 3/6/29

P. O. NO. J 8445

SHIPPED TO
 SHIPPED FROM

F. O. B.

TERMS

SHIPPED VIA

NET 30 DAYS
 UNIV COLLECT

CAR

SOLD
 TO

FERDINAND GUTMANN & CO
 BUSH TERMINAL BLDG #19
 BROOKLYN N Y

FOR CUSTOMER'S USE

TERMS

NO. B.

ACCOUNT

APPROVAL

TRANSPORTATION

RECEIVAL

CALCULATIONS

ADJUSTMENT

AUDITED

YOUR ORDER NO.

SALES NO. CAGE

DISCOUNT AMOUNTING TO \$
 WILL BE ALLOWED IF PAYMENT IS
 RECEIVED BY US ON OR BEFORE

NET

WILL NOT BE ALLOWED THEREAFTER

NO. CASES

Our responsibility for safe delivery of goods ceases when we obtain
 Railroad Receipt in good order.

PRICE

AMOUNT

MS ALP41

1

PLAIN ALUMINUM FOIL UNMTD
 SIZE 17 ROLLS 21 1/2#
 LESS FRT ON 42#GROSS AT 1 18 PER CWT

1 049

22 55

22 05

L8

REC'D

PRICE

EATEN.

ENTERED

PAID.

CHECK No

13/243
 1126
 MAR 20 1929
 11284

PLAIN OR PRINTED ALUMINUM, PURE TIN AND COMPOSITION FOILS—MASTER METAL WRAPPERS, CARTONS AND NOVELTIES.

BLANK

PAGE

1096

SUCCEEDED BY REYNOLDS' METALS CO.

MS ALP41

~~NO BROOKLYN~~ BROOKLYN, N. Y.
BUSH BLDG #19

P. O. No. BT 2393

INVOICE NO. B 4564

DATE 6/10/29

FOR CUSTOMER'S USE

SALES No. J CAGE

SHIPPED TO

SHIPPED FROM BUSH TERMINAL PLANT

P.O. B. BKLYN DELVD

TERMS: 30 DAYS NET

SHIPPED VIA ME 89ENGER

CAR No. _____

SOLD
TO

FERDINAND GUTMANN CO
BUSH BLDG #19
BROOKLYN N Y

TERMS _____
F. O. B. _____
ACCOUNT _____
APPROVAL _____
TRANSPORTATION _____
RECEIVAL _____
CALCULATIONS _____
ADJUSTMENT _____
AUDITED _____

DISCOUNT AMOUNTING TO :
will be allowed if payment is
received by us on or before
WILL NOT BE ALLOWED THEREAFTER

YOUR ORDER NO.	NO. CASES	Our responsibility for safe delivery of goods ceases when we obtain Railroad Receipt in good order.
----------------	-----------	---

PRICE

CORRECTED INVOICE

1 CB PLAIN ALUMINUM FOIL IN ROLLS

SIZE: 26" WIDE 91" NET

• 5615

\$43.99

GROSS: 121.4

Deduct as credit the
 difference between this and
 Please remit to Reynolds Metals Co.
 Successors to United States Foll Co.
 212 Fifth Avenue
 New York

REC 9.

PR,CE

《天衣集》

000000

END

9.11.19

PLAIN OR PRINTED ALUMINUM, FIRE TIT AND COMPOSITION FOLDS—THE LEAD, WAXED PAPERS, METAL LINED FIRE CAR

1097

FOR CUSTOMER'S USE

SHIPPED VIA MESSENGER

CAR No. _____

SOLD TO

FERDINAND GUTMANN CO
BUSH BLDG #19
BROOKLYN N Y

TERMS

P. O. B.

ACCOUNT

APPROVAL

TRANSPORTATION

RECEIVED

CALCULATIONS

ADJUSTMENT

AUDITED

DISCOUNT AMOUNTING TO :

will be allowed if payment is received by us on or before

WILL NOT BE ALLOWED THEREAFTER

YOUR ORDER NO.	NO. CASES	Our responsibility for safe delivery of goods commences when we obtain Railroad Receipt in good order.	PRICE		
	1 88	PLAIN ALUMINUM FOIL IN ROLLS SIZE: 26" WIDE GROSS: 121# 91 LBS NET 53 1/4 # JUN 20 1929 199 177.99	39		\$53.99 45.89 1.10
Please remit to Reynolds Metals Co. Successors to United States Foil Co. 212 Fifth Avenue New York					

PLAIN OR PRINTED ALUMINUM, PURE TIN AND COMPOSITION FOLDS—TEA LEAD, WAXED PAPERS, METAL LINED FIBRE CARB

877

1098

DEFENDANT'S EXHIBIT 0

FACTORIES:
LOUISVILLE - BROOKLYN - SAN FRANCISCO.
SALES OFFICES OR REPRESENTATION IN PRINCIPAL CITIES OF UNITED STATES - LONDON - COPENHAGEN -
HAVANA - MANILA - MELBOURNE - SHANGHAI - TOKYO

REYNOLDS METALS COMPANY

INCORPORATED

UNITED STATES FOIL DIVISION**LOUISVILLE, KY., U.S.A.**

CABLE ADDRESS: "FOILWA"
CODES USED:
SENTLEY'S COMPLETE PHRASE
WESTERN UNION
LIEBOW AND A. S. C.

PURE TIN, ALUMINUM
COMPOSITION, LEAD, AND
ZINC FOILS, MASTER METAL FOIL
PRODUCTS - WRAPPERS,
CARTONS, BOX TOPS, NOVELTIES,
TINNED, AND ALLIED ITEMS.

THIS LETTER WRITTEN FROM
NEW YORK BRANCH
110 BRIDGE ST., BROOKLYN, N. Y.

TELEPHONE TRIANGLE 1479
1480

67011
United States District Court
Eastern District of New York

Exhibit 0 in evidence 23

Date 2-11-29

Clerk

(J) Deputy Clerk

February 9, 1929

Ferdinand Guttman Inc.
Bush Building No. 19
Brooklyn, New York

Attention: Mr. B. Cohen, please

Gentlemen:

Our Louisville office advises that they feel they will have no trouble in mounting Gutta Percha to foil by the application of a mild heat, as suggested by you, and they would like to have a small trial order - say 50 or 100 pounds, for you to play with.

Will you oblige accordingly?

Very truly yours,

REYNOLDS METALS CO. INC.

James Cage
James Cage

JC:M

MASTER METAL PRODUCTS

878
1099

FACTORIES:
LOUISVILLE - BROOKLYN - SAN FRANCISCO.
SALES OFFICES OR REPRESENTATION IN PRINCIPAL CITIES OF UNITED STATES - LONDON - COPENHAGEN -
HAVANA - MANILA - MELBOURNE - SHANGHAI - TOKIO

REYNOLDS METALS COMPANY

CABLE ADDRESS "FOILWAX"
CODES USED:
BENTLEY'S COMPLETE PHRASE
WESTERN UNION
LIEBERS AND A B C.

INCORPORATED
UNITED STATES FOIL DIVISION
LOUISVILLE, KY, U.S.A.

PURE TIN, ALUMINUM,
COMPOSITION, LEAD, AND
ZINC FOILS, MASTER METAL FOIL
PRODUCTS, WRAPPERS,
CARTONS, BOX-TOPS, NOVELTIES,
TINSEL, AND ALLIED ITEMS.

SALES DEPARTMENT

- February 22, 1929 -

Ferdinand Gutmann & Company,
Bush Terminal Bldg., #19,
Brooklyn, N.Y.

Gentlemen:-

Your letter of February 9 has been forwarded from our New York office, and we have entered your order for 100 pounds of .0025 gauge Aluminum mounted with heat to gutta-percha and spooled in 1 inch rolls.

"We don't know just what luck we will have with this order, we are confident we can turn out this foil satisfactorily, but of course do not wish to guarantee to do so until we have had the opportunity of making this trial run.

If we are successful this 100 pounds will be sent you in a week to ten days time.

"We note your letter reads. - "mounted on gutta-percha 9 to 10 square yards to the pound" but the gutta-percha we have been using yields approximately 7650 square inches to the pound.

Wait on gutt percha
Yours very truly
REYNOLDS METALS COMPANY, INC.

E. R. Thomson
E. R. Thomson
SALES DEPARTMENT

ERT:I
ny

UNITED STATES FOIL CO., INC.
LOUISVILLE, KY.

879

1100

Date Cust. Order <u>2/19/29-2/15(1k)</u> Order No. <u>J 8445</u>		Invoice To <u>SAME.</u>	
Date P. O. <u>FEB. 18, 1929</u>	PROMPTLY	Street Address	
Ship To <u>FERDINAND GUTMANN & COMPANY</u>		City	
Street Address <u>BUSH TERMINAL BLDG. #19</u>		Terms <u>NET CASH 30 DAYS</u> (Just. Order No.)	
City <u>BROOKLYN, N. Y.</u>		<u>1. O. B. Lou. FRT. ALL 'D. NOT</u>	
Routing <u>VIA. UNIVERSAL</u>		<u>TO EXCEED \$1.50 PER CWT. ON SHIPMENTS OF 1000</u>	
CAGE -		<u>OR MORE.</u>	
PRONPTLY -		CAGE -	
Design	Quantity	Size	Mfg. Stock No.
	1000	1" WIDE -	AL-P 41 (MTD. TO GUTTA PERCHA) .0025 GAUGE.
Manufacturing Marks:-			
No.	Paper Stock No.	Paper Wt.	Route P. Class Prod. Class Inv. Sds. No.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Price			

USE 1-5/16" CORES.
MOUNTING IS TO BE DONE BY MEANS OF HEAT AND
WITHOUT THE USE OF ANY ADHESIVE.

Q/B

THANK YOU FOR YOUR ORDER

Of which this is an exact copy as released to our factory. Please check carefully and advise us at once
if not in accordance with your specifications.

BLANK

PAGE

880

DEFENDANT'S EXHIBIT P

1101

TELEPHONE 2473 WILLIAMSBURGH

OUR INVOICE NO. 2191

A. JOHNSON MACHINE WORKS

CROWNING
MACHINES

TOOLS, DIES AND SPECIAL MACHINERY

CROWN
AND CORK
MACHINERY251-259 LEE AVENUE,
CORNER LORIMER STREET

BROOKLYN, N. Y. August 31, 1928.

SOLD TO Ferdinand Gutmann & Co.,

NET CASH 30 DAYS

166 - 59th St., Brooklyn, N. Y.

Aug.	28	1 Tin Foil Machine, with Standard Drum	950	00
<div data-bbox="278 1031 560 1266" data-label="Text"> <p><i>Markale</i> <i>Crown</i></p> </div> <div data-bbox="534 1031 853 1266" data-label="Text"> <p>32/133 OK. CTS. PRICE CASH INTEREST PAID J 144 OCT 3 - 1928 754.90</p> </div> <div data-bbox="844 1210 1123 1281" data-label="Text"> <p>6737/ United States District Court</p> </div>				

881

1102

1102

DEFENDANT'S EXHIBIT Q

TELEPHONE 2473 WILLIAMSBURG

OUR INVOICE NO. 2542

Your order of 4/6/29

A. JOHNSON MACHINE WORKS

CROWNING
MACHINES

TOOLS, DIES AND SPECIAL MACHINERY

CROWN
AND CORK
MACHINERY

251-259 LEE AVENUE

CORNER LORIMER STREET

BROOKLYN, N. Y.

April 30th 1929.

SOLD TO Ferdinand Gutmann & Company,

168 - 39th Street,

Brooklyn, New York.

NET CASH 30 DAYS

Apr.	24	1 Assembling Machine, with one (1) extra head, roll feed, clutch, large gear, motor attached under machine (your motor), bracket with stand, and hopper chute. Paper Feed changed to back of machine.	1725	00
		1 14" Grooved Wheel		

*Mach/c
Crowns*

REC'D
PRICE
EXTEN
ENTERED
DATE

2/8/44
CRK

JUN 1 1929
77630

United States District Court
Eastern District of New York
Exhibit Q is evidence (OK 4)
Date Nov-7/31
Clerk
Deputy Clerk

TELEPHONE 2473 WILLIAMSBURG

OUR INVOICE NO. 2427

Your order of 3/2/29

A. JOHNSON MACHINE WORKS

CROWNING
MACHINES

TOOLS, DIES AND SPECIAL MACHINERY

CROWN
AND CORK
MACHINERY

251-259 LEE AVENUE

CORNER LORIMER STREET

BROOKLYN, N. Y.

March 30th 1929.

SOLD TO Ferdinand Gutmann & Company,

168 - 39th Street,

Brooklyn, New York.

NET CASH 30 DAYS

Mar.	19	1 Assembling Machine, with one (1) extra head, roll feed, clutch, large gear, motor attached (your motor), bracket with stand, and hopper chute	1700	00
		Paper Feed changed to back of machine Extra	25	00
		1 14" Grooved Wheel	NO CHARGE	
				1725 00

*Mach/c
Crowns*

REC'D
PRICE
EXTEN
ENTERED
DATE

2/8/44
CRK

JUN 1 1929
77630

APR 24 1929
77630

TELEPHONE 2473 WILLIAMSBURG

OUR INVOICE NO. 2315

A. JOHNSON MACHINE WORKS
TOOLS, DIES AND SPECIAL MACHINERY

251-259 LEE AVENUE,
 CORNER LONGER STREET

BROOKLYN, N. Y. DECEMBER 19th 1928.

SOLD TO Ferdinand Gutmann & Co.,

168 - 39th St.
 Bklyn, New York.

1103 882
 CROWN
 AND CORK
 MACHINERY

CROWNING
 MACHINES

NET CASH 30 DAYS

Dec.	12	One (1) Assembling Machine, with one (1) extra head, roll feed, clutch, large gear, motor attached (your motor), bracket with stand and hopper chute.	1700 00		
"	12	One (1) 14" Grooved Wheel	No Charge		
					\$1700 00

W

16.71 per

OK

160

JAN 18 1929

1660

Check a/c Crown

TELEPHONE 2473 WILLIAMSBURG

OUR INVOICE NO. 2211

A. JOHNSON MACHINE WORKS

TOOLS, DIES AND SPECIAL MACHINERY

251-259 LEE AVENUE,
 CORNER LONGER STREET

BROOKLYN, N. Y. September 17, 1928.

SOLD TO Ferdinand Gutmann & Co.,

166 - 38th St., Brooklyn, N. Y.

CROWN
 AND CORK
 MACHINERY

CROWNING
 MACHINES

NET CASH 30 DAYS

Sept.	15	1 Assembling Machine, with one (1) extra head, roll feed, clutch, large gear, motor platform, bracket with stand and hopper chute.	1700 00		
		1 14" Grooved Wheel	No Charge		
					1700 00

20/3

167

OCT 17 1928

16298

Check a/c Crown

883

1104

DEFENDANT'S EXHIBIT R

TELEPHONE 2473 WILLIAMSBURG

JUR INVOICE NO.

1279

A. JOHNSON MACHINE WORKS INC.

CROWNING
MACHINES

TOOLS, DIES AND SPECIAL MACHINERY

CROWN
AND CORK
MACHINERY

251-259 LEE AVENUE

CORNER LORIMER STREET

BROOKLYN, N. Y. May 31, 1933.

SOLD TO Ferdinand Gutmann & Co.,

168 - 39th St., Brooklyn, N. Y.

17 CASH 30 DAYS

May	25	1 #68 Crown Assembling & Tin Foil } Spot Machine, with Gluing } Attachment.	2200 00	
		1 Gluing Attachment for previous machine }	NO CHARGE	
		1 Set Gear Guards " " " }	2200 00	
		Allowance for your parts \$100.00		
		Allowance in accordance with agree- ment of July 13, 1931, for return of #108 Lining Machine. 125.00	225 00	
		1 Johnson labeled		1975 00
		1 Drum		100 00
		Mech of Crown		
		Subtotal 275 00		
		PRICE 67371		1875 00
		EXT. 1875 00		
		ENTERED AUG 8 - 1933		
		PAID 743 80		
		Date		
		Exhibit R		
		in evidence		
		Clerk		
		Deputy Clerk		

1105

6641

Telephone: Williamsburg 2473

RECEIVED FROM

A. JOHNSON MACHINE WORKSCROWNING
MACHINES

251-259 LEE AVENUE

CROWN AND CORK

BROOKLYN, N. Y.

MACHINERY

12616

Date June 15 1933Name Ferdinand Gutmann & Co.Address 168-39th St., Brooklyn N. Y.Customer's Order No. _____ Driver Seaman

QUANTITY	DESCRIPTION OF ARTICLES	AMOUNT
1	# 68 Crown Assembling & Tin Foil Spot Machine with Bluing Attachment.	
1	Extra Punch & Die	
Returned following:		
1	Used Machine.	
2	H. P. Motors.	
2	Starting Boxes.	
2	Hopper Stands.	
	Tin Foil and Paper.	

2

ALL CLAIMS SHOULD BE REPORTED IMMEDIATELY

CUSTOMER'S COPY
KEEP THIS TICKET

A1116

Brooklyn Station - Automatic Register Co. N. Y. & London, E. I.

1106

TELEPHONE 2473 WILLIAMSBURG

OUR INVOICE NO. 4264

A. JOHNSON MACHINE WORKS INC.

CROWNING
MACHINES

TOOLS, DIES AND SPECIAL MACHINERY

CROWN
AND CORK
MACHINERY251-259 LEE AVENUE
CORNER LORIMER STREET

BROOKLYN, N. Y. May 16, 1933.

SOLD TO Ferdinand Gutmann & Co.,

168 - 39th St., Brooklyn, N. Y.

NET CASH 30 DAYS

May	5	1 #68 Crown Assembling & Tin Foil Spot Machine	2200 00	
		Allowance for other parts	\$150.00	
		Allowance in accordance with agree- ment of July 13, 1931, for return of #108 Lining Machine.	125.00	
			275 00	
				1925 00

*draw & drive for same
roll feed*

Mack a/c

REC'D 300/3 900
PRICE
EXTEN
ENTERED
PAID

1289
MAY 18 1933
88/27

TELEPHONE 2473 WILLIAMSBURG

OUR INVOICE NO. 4284

A. JOHNSON MACHINE WORKS INC.

CROWNING
MACHINES

TOOLS, DIES AND SPECIAL MACHINERY

CROWN
AND CORK
MACHINERY251-259 LEE AVENUE
CORNER LORIMER STREET

BROOKLYN, N. Y. June 19, 1933.

SOLD TO Ferdinand Gutmann & Co.,

168 - 39th St., Brooklyn, N. Y.

NET CASH 30 DAYS

June	15	1 #68 Crown Assembling & Tin Foil Spot) Machine, with Gluing Attachment.)	2200 00	
------	----	--	---------	--

*Mack a/c
Crown*

126/8 64. 402 10/33

PRICE

EXTEN

ENTERED

PAID

1263

AUG 18 - 1933

14310

886

1107

TELEPHONE 2873 WILLIAMSBURG

OUR INVOICE NO. 1283

CROWNING
MACHINES

A. JOHNSON MACHINE WORKS INC.

TOOLS, DIES AND SPECIAL MACHINERY

251-259 LEE AVENUE
CORNER LODGING STREETCROWN
AND CORK
MACHINERY

BROOKLYN, N. Y. June 19, 1933.

SOLD TO Ferdinand Gutmann & Co.,

168 - 39th St., Brooklyn, N. Y.

NET CASH 30 DAYS

June 7 1 #68 Crown Assembling & Tin Foil Spot)
Machine, with Gluing Attachment.)

2200 00

*Machine
Crown*

PAID BY *Y2LY 3/28/33*
PRICE *1263*
DATE *AUG 8 - 1933*
1933

WA

887

1108

DEFENDANT'S EXHIBIT S

TELEPHONE 2473 WILLIAMSBURG

OUR INVOICE NO. 2152

A. JOHNSON MACHINE WORKS

TOOLS, DIES AND SPECIAL MACHINERY

251-259 LEE AVENUE,

CORNER LAMMER STREET

BROOKLYN, N. Y. July 31, 1928

CROWNING
MACHINESCROWN
AND CORK
MACHINERY

SOLD TO Ferdinand Gutmann & Company,

NET CASH *per DAVIS*

168- 39th. Street Brooklyn, New York.

Corrected Bill

July 19

1 Tin Foil Machine, with hopper

\$1200. 00

E7371
United States District Court

Eastern District of New York

Exhibit S in evidence

Date Nov 1/31

Clerk

Deputy Clerk

REC'D

PRICE

EXTEN

ENTERED

PAID

CHECK NO

J 124
AUG 31 1928

95999-

Machap/c Crown

1109

2475

March 19th 1929.

Crown Cork & Seal Company, Inc.,
Eastern Avenue & 11th Street,
Highlandtown, Maryland.

Mar. 7 1 Tin Foil Machine

1400 00

1 Winding Machine

300 00

1700 00

Telephone: Williamsburg 2473

RECEIVED FROM

A. JOHNSON MACHINE WORKS

CROWNING MACHINES

**251-259 LEE AVENUE
BROOKLYN, N. Y.**

**CROWN AND CORK
MACHINERY**

10549

Date Mar. 7 1929

Name Crown Cork & Seal Co. Inc.

Address Eastern Ave. & 11th St., Highlandtown, Md.

Customer's Order No. _____ Driver Saman

QUANTITY	DESCRIPTION OF ARTICLES	AMOUNT
1	Sin Loil Center Machine	1400 ⁰⁰
1	Hinding Machine	300 ⁰⁰
	Penn. R.R.	

ALL CLAIMS SHOULD BE REPORTED IMMEDIATELY

Received by

1111

February 28th 1929.

The Crown Cork and Seal Company,
Baltimore,
Maryland.

Att: Mr. L. F. Olt

Dear Sirs:-

I received your letter of February 27th in regards to the two machines for tin foil discs.

I expect to have these machines ready so that I can ship them to you either Monday or Tuesday of next week.

About two weeks ago I wrote Mr. McHanus that I had quite a few Assembling Machines on hand and I offered him ten or twelve of them at a very low price. I have not heard anything from him in regards to same. I presume that he is so busy that he has no time to think about it as I could see when I was over there that he has his hands full with that big place, but I would appreciate it very much if you would remind him of it as I would like very much to send you a few of the machines that I have on hand.

With best regards, I remain

Yours very truly,

A. JOHNSON MACHINE WORKS

AJ:MS

1112

THE CROWN CORK AND SEAL COMPANY**BALTIMORE, U.S.A.** February 27, 1929

NEW PROCESS CORK CO., INC.
THE CROWN CORK & SEAL CO.
OF BALTIMORE CITY
CONSOLIDATED

A. Johnson Machine Works
251-259 Lee Avenue
Brooklyn, N. Y.

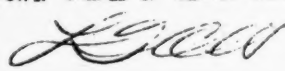
Gentlemen: ✓

Referring to your conversation and correspondence with our Dr. Warth, would suggest that you send us on approval the machine for adhering the gutta percha lining to the tin foil. Also, the machine for cutting the tin foil and fastening same to the cork washer on finished crowns.

Trusting you will get these off to us promptly, advising us by return mail when shipment will be made, we remain

Very truly yours,

CROWN CORK & SEAL CO., INC.


L. F. Olt

LFO/LL

THE PERFORMANCE OF ALL AGREEMENTS ON OUR PART IS CONTINGENT UPON STRIKES, WARS, ACCIDENTS AND OTHER CAUSES BEYOND OUR CONTROL

1113

May 31st 1929.
Crown Cork & Seal Company, Inc.,
Eastern Ave. & 11th Street,
Highlandtown, Maryland.

1400 00

RECEIVED FROM

**CROWN AND CORK
MACHINERY**

Date May 20, 1929

Name Crown Cork & Seal Co. Inc.

Address Eastern Ave. + 11th St., Highlandtown, Md.

Customer's Order No. H 7818 Driver Seaman

QUANTITY	DESCRIPTION OF ARTICLES	AMOUNT
1	Six Loil Machine	1400 —
	Penn. R. R.	

ALL CLAIMS SHOULD BE REPORTED IMMEDIATELY

2

**CUSTOMER'S COPY
KEEP THIS TICKET**

81116

Thermarator Systems - Automatic Register Co. - N. Y. & Hoboken, N. J.

94-111 3 23 1927 F. D. 2526

4 7818

is an acknowledgment that a Bill of Lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shliper's No.

Agent's No. _____

RECEIVED, subject to the classifications and tariffs in effect on the date of the receipt by the carrier of the property described in the Original Bill of Lading.

Wallabout Station, Brooklyn, N. Y.,

May 20.

1929.

from A. Johnson Machine Works

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked consigned, and destined as indicated below, which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own road or its own water line, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law whether printed or written, herein contained, including the conditions on back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

(Master Address of consignee - For purposes of notification only.)

Consigned to Crown Cork & Seal Co., Inc.

Destination Highlandtown.

State of Maryland

County of _____

Results

Car Initial

Car No.

(Delivering carrier)

[illegible]

If this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges. (See section 7 of conditions.)

(Signature of assignor.)

If charges are to be prepaid, write or stamp here, "To be Prepaid."

to apply in prepayment
charges on the property
described herein.

Agent or Cashier

(The signature here acknowledged
only the amount prepaid.)

Charges Advanced:

"If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is 'carrier's or shipper's weight.'"

NOTE.—Where the rate is dependent on value, shippers are required to state specifically, in writing, the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

A. JOHNSON MACHINE WORKS

Shi 7

Per

J. H. Carson

Per.

251-259 Lee Ave., Brooklyn, N. Y.

Permanent post-office address of shipper

LL
REG. NO. C-

Crown Cork and Seal Co., Inc.

BALTIMORE, U. S. A.

894
11/5
ORDER H 7818

5/10/29

TO A. Johnson Machine Works

251 Lee Avenue

Brooklyn, N. Y.

TERMS 30-days net
SHIPMENT DUE OUR PLANT
at once.

SHIP VIA (See Reverse)

PLEASE DELIVER THE FOLLOWING AS PER INSTRUCTIONS ON REVERSE SIDE OF ORDER.
TO US AT HIGHLANDTOWN PLANT-DEPT.- Request of Mr. L. F. Olt

Tin Foil Spotting Machine

To be shipped directly to us.

ADDRESS ALL
CORRESPONDENCE RE-
LATING TO THIS MATTER
TO US AT
EASTERN AVE & 11th ST
HIGHLANDTOWN.

BILL OF LADING MUST
ACCOMPANY INVOICE

Del. 5/20/29

MAIL INVOICES TO EASTERN AVENUE & 11TH STREET.
ORDER NO. MUST APPEAR ON ALL INVOICES.
BILLS MUST BE RENDERED ON DAY OF SHIPMENT.
NOTE ROUTING INSTRUCTIONS CAREFULLY.

Crown Cork and Seal Co., Inc.

L. F. Olt

PURCHASING AGENT

The Crown Cork and Seal Company,
Baltimore,
Maryland.

May 13th 1929.

Att: Mr. L. F. Olt
- Purchasing Department -

Dear Sirs:-

I received yours of May 10th with the enclosed order for one tin foil spotting machine.

I have made a little change on this machine which seems to me to be very good, and I will be able to ship this machine to you by Thursday of this week, and I want to thank you very much for this order.

I was also wondering if you are buying any more Lining Machines for screw caps as I have them perfect now so that they are running very good. I have made considerable changes on the last ones. One of the machines we built to take caps from 38 m/m up to 84. This machine we make for cutting and inserting pulp paper liners, but we make them with cork feed also if desired, and then we make a smaller machine that takes from 15 to 40 m/m. This one we generally make with two heads, one for inserting cork liners, and with cork feeds on same, and the other head for cutting and inserting paper liners.

I expected Mr. Lloyd to come up and see these machines soon, but I have not heard anything from him as yet. I would surely like to sell you a few of these machines as I know that you will be very well pleased with them.

Again thanking you for this order, I remain, with best regards

Yours very truly,

A. JOHNSON MACHINE WORKS

895 1116

THE CROWN CORK AND SEAL COMPANY

BALTIMORE, U.S.A. May 10, 1929.

NEW PROCESS CORK CO. INC.
THE CROWN CORK & SEAL CO.
OF BALTIMORE CITY
CONSOLIDATED

A. Johnson Machine Works,
251 Lee Avenue,
Brooklyn, N. Y.

SUBJECT:- Attached order.

Gentlemen:-

We are attaching hereto our order #H-7818 calling for one Tin Foil Spotting Machine to be shipped direct to us.

✓ We would appreciate your reply, by return mail, as to when this machine will be shipped.

Thanking you in advance for your prompt co-operation, we are,

Yours very truly,

CROWN CORK & SEAL CO. INC.

L J Ott

Purchasing Department

HMD

THE PERFORMANCE OF ALL AGREEMENTS ON OUR PART IS CONTINGENT UPON STRIKES, WARS, ACCIDENTS AND OTHER CAUSES BEYOND OUR CONTROL.

1117 896

2723

Your order No. H 9100

July 31st 1929
 Crown Cork & Seal Co., Inc.,
 Eastern Ave. & 11th St.,
 Highlandtown, Md.

July 31 3 Tin Foil Machines, with Assorting Attach-)
 ment, but without foil cutting die.)

4200 00

Telephone: Williamsburg 2473

RECEIVED FROM

A. JOHNSON MACHINE WORKSCROWNING
MACHINES251-259 LEE AVENUE
BROOKLYN, N. Y.CROWN AND CORK
MACHINERY

10820

Date July 31, 1929Name Crown Cork & Seal Co., Inc.Address Eastern Ave. & 11th St., Highlandtown, Md.Customer's Order No. H 9100 Driver Seaman

QUANTITY	DESCRIPTION OF ARTICLES	AMOUNT
3	Tin Foil Machines, with Assorting Attachment, but without foil cutting die.	4200 -

Pinner, R. R. Co.

ALL CLAIMS SHOULD BE REPORTED IMMEDIATELY

2

CUSTOMER'S COPY
KEEP THIS TICKET

W. L.

1118

2837
Your Order No. H 9100

October 16, 1929.

Crown Cork & Seal Co., Inc.,
Eastern Ave. & 11th St.,
Highlandtown, Md.

July 31 3 Foil Cutting Dies for Tin)
Foil Machines) at \$35.00 each

105 00

Telephone: Williamsburg 2473

RECEIVED FROM

A. JOHNSON MACHINE WORKS

CROWNING MACHINES

**251-259 LEE AVENUE
BROOKLYN, N. Y.**

**CROWN AND CORK
MACHINERY**

10828

Date July 31 1929

Name Crown Cork & Seal Co., Inc.
Address Eastern Ave. & 11th St., Highlandtown, Md.
Customer's Order No. H 9100 Driver Seaman

QUANTITY	DESCRIPTION OF ARTICLES	AMOUNT
3	Soil Cutting Dies for Lin Soil Machines @ 35 ⁰⁰ Each	105 ⁰⁰
	Penn. R. R. Co.	1

ALL CLAIMS SHOULD BE REPORTED IMMEDIATELY

2

**CUSTOMER'S COPY
KEEP THIS TICKET**

B1116

Advertisement Insertion - Automobiles - Hartford Co., N. Y. & Hudson, N. J.

 $T_{1/5}$

1120

899-900

July 5th 1929.

Crown Cork & Seal Company, Inc.,
Baltimore,
Md.

Att: Mr. W. T. Larduskey
-Purchasing Agent-

Dear Sirs:-

I received your order today for three Spotting Machines without the tin foil cutting dies.

I will have these machines ready for delivery in about ten days or at the most two weeks, but regarding the freight to Baltimore, I want to state that the price is F.O.B. NEW YORK. We do not pay any freight outside of this city.

I wanted to mention that so there would be no misunderstanding about same.

Thanking you for the order, I remain

Yours very truly,

A. JOHNSON MACHINE WORKS

AJ:MS

Pat 150-100,000-1-3-28

REG NO

Crown Cork and Seal Co., Inc.

ORDER NO. 9100

BALTIMORE, U. S. A.

7/3/29

TO A. Johnson Machine Works

251 Lee Avenue

Brooklyn, N. Y.

TERMS 30-days net
SHIPMENT DUE OUR PLANT
at once

SHIP VIA (See Service)

PLEASE DELIVER THE FOLLOWING AS PER INSTRUCTIONS ON REVERSE SIDE OF ORDER.
TO US AT HIGHLANDTOWN PLANT-DEPT.-

- 3 Spotting machines complete with all parts as previously supplied, including inspection conveyor belt but without foil cutting die.

ADDRESS: ALL
CORRESPONDENCE RE-
LATING TO THIS MATTER
TO US AT
EASTERN AVE & 11th ST
HIGHLANDTOWN

f.o.b. Baltimore, frt. must be prepaid.

Delivery:-10-days as per your telegram.

BILL OF LADING MUST
ACCOMPANY INVOICE

MAIL INVOICES TO EASTERN AVENUE & 11TH STREET.
ORDER NO. MUST APPEAR ON ALL INVOICES.
BILLS MUST BE RENDERED ON DAY OF SHIPMENT.
NOTE ROUTING INSTRUCTIONS CAREFULLY.

Crown Cork and Seal Co., Inc.

W. T. Larduskey
PURCHASING AGENT

[fol. 1121]

DEFENDANT'S EXHIBIT U

IN THE UNITED STATES PATENT OFFICE

Interference No. 66,201

ALBIN H. WARTH

VS.

JOHN A. JOHNSON

Petition to Institute Public Use Proceedings

To the Hon. Commissioner of Patents:

Now comes John A. Johnson, by his attorney, John O. Seifert, and petitions for the suspending of the proceedings in the above entitled interference and the issue of an order to institute public use proceedings to investigate the question of the reducing of the invention of the counts of the interference to commercial use more than two years prior to the filing, April 4, 1933, and presenting of claims covering the invention and constituting the counts of the interference in the application of the junior party Warth, Serial No. 664,410, and constituting a statutory bar to the granting of a patent on said Warth application.

The petition is based on the decision, October 2, 1933, of the Examiner of Interferences denying a motion on behalf of the party Johnson to dissolve the interference on the ground that the issue counts are not supported by the disclosure in the specification and drawings of the Warth application, and the ground that the disclosure in the specification and drawings of the Warth application is inoperative, [fol. 1122] and also denying a motion made on behalf of the party Warth to shift the burden of proof in view of his earlier co-pending application Serial No. 494,401, filed November 7, 1930, which in turn is a division of his application Serial No. 159,743, filed January 7, 1927, and patented January 6, 1931. No. 1,788,260.

The issue of the interference comprises three counts which originated in and constitute claims 28, 29 and 30 of

the Johnson patent, and were copied in the Warth application Serial No. 664,410, and read as follows:

"1. The method of assembling linings for sealing pads in receptacle closure caps, consisting in providing caps with sealing pads therein and a web of lining material arranged with an adhesive surface non-viscous at normal temperature, heating the pads in the caps, and severing lining from the web of lining material and assembling the lining as they are severed from the web in the caps with the adhesive surface in contact with the heated pads to render the adhesive viscous and effect adhesion of the linings to the pads.

"2. The method of assembling linings for sealing pads in receptacle closure caps, consisting in providing caps with sealing pads therein and a web of lining material arranged with an adhesive surface non-viscous at normal temperature, heating the pads in the caps, severing linings from the web of lining material and assembling the linings as they are severed from the web in the caps with the adhesive surface [fol. 1123] face in contact with the heated pads to render the adhesive viscous and effect adhesion of the linings in the caps under heat and pressure to effect an intimate adhesion between the linings and pads.

"3. The method of assembling linings for sealing pads in receptacle closure caps, consisting in providing caps with sealing pads therein and a web of lining material arranged with an adhesive surface non-viscous at normal temperature, heating the pads in the caps, severing the linings from the web of lining material and assembling the linings as they are severed from the web in the caps with the adhesive surface in contact with the heated pads to render the adhesive viscous and effect adhesion of the linings to the pads, then placing the linings in the caps under the heat and pressure to effect an intimate adhesion between the linings and pads, and then placing the linings assembled in the caps under pressure during the cooling thereof."

The invention relates to a method of assembling lining or "spots" on sealing or cushion pads in the well known crown bottle caps, the lining being affixed to the usual cap pad by means of an adhesive which is rendered tacky or viscous when heated. The method specified in the count

as stated by the Examiner of Interferences (lines 1-5, page 2 of his decision) :

"consists in the step of preheating the cork pad and then applying [fol. 1124] to it a lining having thereon a layer of the dried adhesive. The heat of the pad softens the adhesive which, in turn, unites the lining and pad."

He also stated, last two lines, page 2, and line 1, page 3:

"It is admitted that the principal method set forth in the Warth specification involves a simultaneous application of the lining and heat."

And lines 6-9, page 4:

"Thus it is clear that the so-called 'preheating' step occurs after the lining or spot is applied and not before as required in each of the issue counts."

And lines 15-18, page 4:

"The language relied upon by Warth, therefore, clearly fails to support the construction in conformity with the issue counts."

While the Examiner of Interferences held that the drawings and specification of the Warth application, Serial No. 664,410, involved in the interference, did not disclose the invention of the issue counts, nevertheless "as filed the (Warth) application contained the issue counts," and in view of the decision in *Gugler*, 1910 C. D., 210, held that "therefore, it cannot be held that the very counts which are present in the application as filed constitutes new matter," and denied that portion of the Johnson motion to dissolve [fol. 1125] the interference on the ground that the issue counts are not supported by the disclosure in said Warth application involved in the interference.

In this connection, attention is called to the fact that the claims constituting the issue counts did not originate with the party Warth, but originated in the application for the Johnson patent and were copied in the Warth application and comprise the only claims in the Warth application with a single additional nebulous claim alleged in Paper No. 2, filed in the Warth application to be "substantially claim 19 of the Johnson patent." This claim in the Warth application includes the element of the heated plunger *j* which was

not disclosed in the earlier Warth applications and was for the first time disclosed in the Warth application involved in the interference.

In connection with that portion of the Johnson motion based on the ground that the Warth disclosure is inoperative, the Examiner of Interferences stated, lines 4-8, page 6:

"the means disclosed by Warth is not even intended to perform the method set forth in the issue counts since it will not operate to heat the pad prior to the application of the spot."

From the foregoing excerpts from the decision of the Examiner of Interferences, it is clear that the only disclosure in the Warth application Serial No. 664,410 involved in the interference is in claims*1, 2 and 3, which were copied from the Johnson patent and presented in the Warth application as filed April 4, 1933.

[fol. 1126] The motion on behalf of the party Warth to shift the burden of proof was based upon the allegation that Warth's prior applications, Serial No. 159,743 and Serial No. 494,201, discloses the issue of the interference. The Examiner of Interferences in connection with said applications stated, lines 18-24, page 6, and lines 1-3, page 7:

"The alleged disclosure in these earlier applications is found in the identical descriptive matter relied upon to support the issue in the Warth application 664,410 here involved. This descriptive matter is discussed fully in connection with Johnson's motion to dissolve, where it was held not to support the issue counts. There is no other matter in the drawings, descriptions, or claims of the earlier Warth applications that is pertinent to the particular method specified in the present issue."

In denying the Warth motion to shift the burden of proof, Examiner of Interferences stated, lines 4-16, page 7:

"While, as indicated in connection with the motion to dissolve, it seems quite clear that the issue is not supported by the description or drawings in the Warth application, it must be noted that even if some doubt exists, the burden of proof cannot be shifted; Munroe v. Alexander 1903 C. D. 334. Moreover, it is well settled that where an applicant copies claims from a patent it is incumbent upon him to show that

his application discloses the invention upon which the patent [fol. 1127] claims were drawn. Stunstrup v. Morton 58 App. D. C. 343, 1929 C. D. 153; Field v. Stow 49 (2d) 1072, 1931 C. D. 649." (Italics added.)

It is, therefore, clear that the only disclosure of the invention of the issue counts by the party Warth is by claims 1, 2 and 3 copied from the Johnson patent in the Warth application Serial No. 664,410 involved in the interference, said application having been filed April 4, 1933, one year less one day after the issue, April 5, 1932, of the Johnson patent No. 1,852,578 involved in the interference, and over three years after the filing date of the application for said Johnson patent, November 26, 1929.

The purpose of the public use proceedings is to show the reducing of the invention of the counts of the interference to commercial and public use more than two years prior to the filing, April 4, 1933, of the Warth application involved in the interference.

In support of the commercial and public use of the invention of the counts, more than two years prior to April 4, 1933, there is submitted herewith affidavits of the following parties:

Nicholas Corsi, Brooklyn, New York,
 Vincent Scuderi, Brooklyn, New York,
 Rudolph V. Fusco, Brooklyn, New York,
 John W. Larson, Bogota, New Jersey,
 Charles W. Molander, Sr., Brooklyn, N. Y.,
 Alfred Krafft, Brooklyn, New York.
 John O. Seifert, Flushing, L. I., and
 John A. Johnson, Woodhaven, L. I.

[fol. 1128] Your petitioner offers, to produce the foregoing parties as witnesses, and possibly others, to substantiate the allegations of the affidavits.

The affidavits all set forth acts which took place more than two years prior to the filing of the Warth application, April 4, 1933. The Corsi and Scuderi affidavits set forth acts as to carrying out commercially and publicly spotting down caps as recited in the issue counts and that the machine for carrying out the method was purchased from the Johnson Machine Works, Inc. The Johnson, Fusco and Molander affidavits set forth the fact of the constructing of

machines for carrying out the method; the Johnson, Molander and Larson affidavits to the delivery of machines for carrying out the method to Ferdinand Gutmann & Co., the Arrow Bottle Cap Corporation, and the Crown Cork & Seal Co., Inc., and the Krafft and Seifert affidavits to the witnessing of the carrying out of the method.

Your petitioner also offers to bear the expense of the Office in conducting the investigation.

The petition is filed in duplicate and it is requested that the Office forward one set of the papers to the applicant or his attorneys.

The interference is between a patent and an application and is in its early stages. Neither party has taken testimony on the question of priority, and as public use will dispose of the application, in accordance with the decision in *Sarfert v. Meyer*, 1902, C. D. 30, it is not seen that there is any reason why the public proceedings should not be instituted.

Your petitioner, therefore, requests that the interference [fol. 1129] be suspended and an order issued to institute public use proceedings.

Respectfully submitted, John A. Johnson, by John O. Seifert, His Attorney. 277 Broadway, New York, N. Y.

December 4, 1933.

Affidavit

STATE OF NEW YORK,
County of New York, ss:

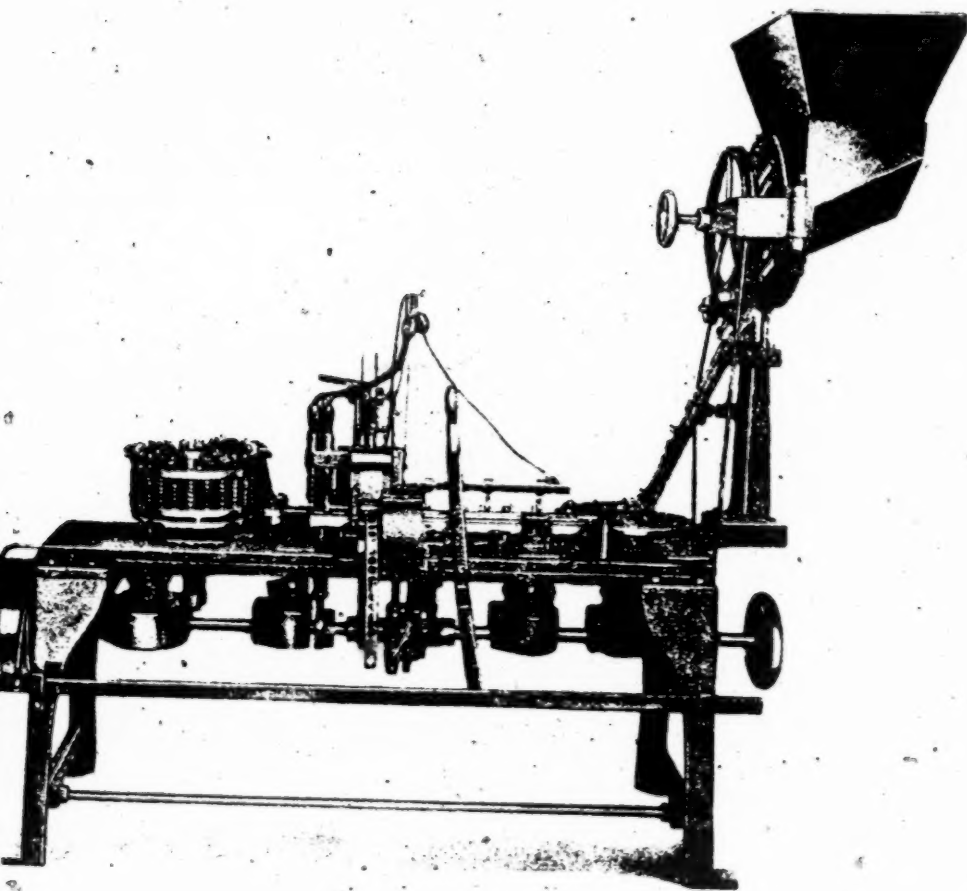
John A. Johnson, of Woodhaven, in the County and Borough of Queens, City and State of New York, being duly sworn, deposes and says that he is the patentee of Letters Patent No. 1,852,578, issued April 5, 1932, for Method of and Apparatus for Assembling Linings in Receptacle Closure Caps, and involved in interference No. 66,201 with the application of Albin H. Warth, Serial No. 664,410, filed April 4, 1933; that he is doing business under the name of A. Johnson Machine Works, Inc., located at 251-259 Lee Avenue, Brooklyn, New York; that prior to and since July 17, 1928, there was constructed in the shop of the A. Johnson Machine Works, Inc., machines for the spotting of crown [fol. 1130] bottle caps in accordance with the method set

forth in claims 28, 29 and 30 of said patent, said machines being constructed in all essential details as illustrated in the drawings forming a part of said Letters Patent and functioning as described in the specification thereof; that said machines for carrying out the method of claims 28, 29 and 30 of said patent have been in commercial and public use for more than two years prior to April 4, 1933, by Ferdinand Gutmann & Co., 168 39th Street, Brooklyn, New York; the Arrow Bottle Cap Corporation, 410 Morgan Avenue, Brooklyn, New York, and the Crown Cork & Seal Co., Inc., Baltimore, Maryland, the assignee of Albin H. Warth, whose application Serial No. 664,410 is involved in interference with patent No. 1,852,578, issued to me; that the illustration on the attached page 18 of the A. Johnson Machine Works, Inc. catalogue is a reproduction of a photograph of such a machine; that the parts and mechanism of said machines are in accordance with the machine illustrated in the drawings of patent No. 1,852,578, and the illustration on the accompanying page 18 of the catalogue of the A. Johnson Machine Works, Inc., and functions to carry out the method as stated in claims 28, 29 and 30 of said patent comprising the delivery of crown caps with sealing pads assembled therein by a chute 14 from a hopper to a rotatable table 18, (Figures 2 and 3), and from said disk 18 to a pair of rails 24 which support the caps at opposite marginal portions of the skirt, the caps being fed along said rails by a rack 29; that the pads in the caps are preheated as they are fed along said rails by an electric heater 46 superposed to the travel of the caps on the rails by [fol. 1131] pivoted arms 47; that the caps as they are delivered from the heater 46 are fed relative to punch and die mechanism, as shown in Figure 2 and in detail in Figures 6 and 10 to 15 of said Johnson patent, the punch co-operating with the die to cut a spot or disk from a web, shown at W, of a material impervious to moisture and having gutta percha bonded to one surface thereof, the punch in successive sequence with the cutting of the disk from the web depositing it upon the preheated pad with the gutta percha face in contact therewith, the heat of the pad rendering the gutta percha viscous or tacky and causing it to adhere to the preheated cap pad; that the crown caps with the spots so assembled on the pad therein are then placed under heat and pressure to effect an intimate uniting of

the spot with the cap pad by delivering the cap from the punch and die mechanism successively to heated plungers, as shown at 157 in Figure 1 and in detail in Figures 16 and 17, and the spots on the cap pads are then placed under pressure during the cooling period by delivering the caps from the heated plungers 157 to plungers 177 carried by a table 168, as shown in Figures 1 and 2, the caps being delivered by the rack 29 from the supporting rails 24 to the table 168 and the spots on the cap pads engaged by the plungers 177; that the machines upon delivery to Ferdinand Gutmann & Co. and the Arrow Bottle Cap Corporation were set up for operation and I have since at various times observed the operation of said machines in carrying out the method of spotting crown caps in accordance with the issue counts and upon information believe that the machines delivered to the Crown Cork & Seal

(Here follows 1 photo, folio 1132)

A. JOHNSON MACHINE WORKS, BROOKLYN, N. Y., U. S. A.



PATENTED AND OTHER PATENTS APPLIED FOR

No. 94 Johnson Tin Foil Center Machine

This machine is made for inserting centers on the cork disc in crown corks of tin foil or any other suitable material, and if desired, the whole cork disc can be covered. It can also be used for screw caps or any other caps that are made for the same purpose. It is provided with automatic roll feed and will not cut any material unless there are caps going through.

The heating for fusing the sticking material is done with electric heaters. The speed of this machine is about 200 to 225 per minute.

Size of driving pulley.....	12" diameter 3" face
Speed.....	225 R. P. M.
Floor space.....	6'x2'
Weight.....	1,400 lbs.

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[fol. 1133] Co., Inc. were set up for operation and have been in operation ever since in the assembling of spots or linings upon pads of crown closure caps.

John A. Johnson.

Subscribed and sworn to before me this 31st day of October, 1933. (Signed, Jack Frost, Notary Public, N. Y. County, No. 200. Expires March 30, 1934. (Seal.)

Affidavit

STATE OF NEW YORK,

County of New York, ss:

John O. Seifert, of Flushing, in the Borough and County of Queens, City and State of New York, being duly sworn, deposes and says that he is the attorney for John A. Johnson whose patent No. 1,852,578 is involved in interference No. 66,201 with the application of Albin H. Warth, Serial No. 664,410, filed April 4, 1933; that he prepared and prosecuted the application for said Johnson patent No. 1,852,578; that prior to the preparation of said application, at the request of said Johnson, he called, January 22, 1929, at the shop of the A. Johnson Machine Works, Inc., 251-259 Lee [fol. 1134] Avenue, Brooklyn, New York, and examined a machine for the applying of linings or spots to the sealing or cushion pads of crown closure caps for receptacles, wherein the sealing pad assembled in the cap was preheated preparatory to cutting a disk or spot from a web of lining or spotting material having one surface coated with an adhesive material non-viscous or non-tacky at normal temperature and adapted to be rendered viscous or tacky by an elevated temperature, and assembling the cut disk upon the preheated sealing pads in the crown caps with the adhesive surface in contact therewith, the heat of the sealing pads rendering the adhesive of the cut disk viscous or tacky and thereby causing the same to adhere to the sealing pad of the crown cap, after which the linings or spots assembled on the cap pads are subjected to heat and pressure to cause an intimate uniting of the lining disks to the cap pads, and then placed under pressure during the cooling period; that he took with him, one, Alfred Krafft, of Brooklyn, New York, a draftsman, to witness the operation of machine at that time in the presence of said Krafft, said John A.

Johnson and, one, Rudolph V. Fusco, of Brooklyn, New York, and that the machine functioned to assemble linings or spots upon the sealing pads of crown caps in the manner above set forth; that linings or spots were applied to the sealing pads of several hundred crown caps, the machine first being run under power and then turned over by manual power in order that the carrying out of the several steps could be and were understood by deponent, the functioning of the machine in carrying out the steps of the method to assemble linings or spots upon the pads of crown [fol. 1135] caps being explained by said Johnson; that the drawings accompanying and forming a part of said Letters Patent No. 1,852,578 were made by said Krafft under the instructions of deponent and directions of said Fusco, and that the drawings of said patent illustrate the machine examined and operated before deponent at such time, January 22, 1929.

John O. Seifert.

Subscribed and sworn to before me this 29th day of November, 1933. (Signed) Jack Frost, Notary Public, N. Y. County, No. 200. Expires March 30, 1934. (Seal.)

Affidavit

STATE OF NEW YORK,

County of New York, ss:

Nicholas Corsi, of the Borough of Brooklyn, County of Kings, City and State of New York, being duly sworn, deposes and says that during October, 1930, he was associated with the Arrow Bottle Cap Corporation, then having a place of business at 410 Morgan Avenue, Brooklyn, New York; that said corporation purchased from the A. Johnson Machine Works, Inc., of 251-259 Lee Avenue, Brooklyn, New York, a machine for spotting sealing pads of crown closure caps for bottles, which machine was delivered at the place of business of said Arrow Bottle Cap Corporation on or about the 4th day of October, 1930; that the method of spotting crown closure caps as carried out by said machine consisted in the heating of the pads assembled in the crown caps, the crown caps then being successively presented to punch and die mechanism to cut a disk from a composite web of spotting or lining material impervious

to moisture and having a coating of gutta percha bonded on one surface thereof, the spot or disk as it is cut by the punch being in successive sequence positioned upon the heated pad of a crown cap, the heat of the cap rendering the gutta percha of the cut spot viscous or tacky and causing it to adhere to the cap pad, the crown cap with the spot or lining disk so assembled thereon then being presented to means to place the spot on the cap pad under heat and pressure to cause an intimate uniting of the spot to the cap pad, and from said heat and pressure means the cap is presented to means to place the spot and pad in the crown cap under pressure during the cooling period; that I have examined Patent No. 1,852,578, issued to John A. Johnson, April 5, 1932, for Method of and Apparatus for Assembling Linings in Receptacle Closure Caps; that the machine purchased by and delivered to the Arrow Bottle Cap Corporation on or about October 4, 1930, was constructed in accordance with the machine illustrated in the drawings of said Johnson patent, the crown caps being delivered by a chute 14 to a rotatable disk 18, (Figures 2 and 3), and from said disk 18 [fol. 1137] to a pair of rails 24 to support the caps at opposite marginal portions of the skirt, the caps being fed along said rails by a rack 29; that the pads in the caps are preheated as they are fed along said rails by an electric heater 46 superposed to the travel of the caps on the rails by pivoted arms 47; that the caps as they are delivered from the heater 46 are fed relative to punch and die mechanisms, as shown in Figure 2 and in detail in Figures 6 and 10 to 15 of said Johnson patent, the punch co-operating with the die to cut a spot or disk of lining material from a web, shown at W, of a material impervious to moisture and having gutta percha bonded to one surface thereof, the punch in successive sequence with the cutting of the disk from the web depositing it upon the preheated pad with the gutta percha face in contact therewith, the heat of the pad rendering the gutta percha viscous or tacky and causing it to adhere to the preheated cap pad; that the crown caps with the spots so assembled on the pad therein are then placed under heat and pressure to effect an intimate uniting of the spot with the cap pad by delivering the cap from the punch and die mechanisms successively to the heated plungers, as shown at 157 in Figure 1 and in detail in Figures 16 and 17, and the spots on the cap pads are then placed under pressure during the cooling period by delivering the caps from the

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heated plungers to plungers 177 carried by a table 168, as shown in Figures 1 and 2, the caps being delivered by the rack 29 from the supporting rails 24 to the table 168 and the spots on the cap pads engaged by the plungers 177; that the machine was set up for operation immediately upon [fol. 1138] delivery; that the Arrow Bottle Cap Corporation was dissolved and since such dissolution there was formed the Ajax Bottle Cap Corporation, having a place of business at 12-26 Flushing Avenue, Brooklyn, New York, and of which corporation I am the President; that said Ajax Bottle Cap Corporation took over the machine hereinbefore referred to from the Arrow Bottle Cap Corporation, and said machine is now in operation in the plant of the Ajax Bottle Cap Corporation.

Nicholas Corsi.

Subscribed and sworn to before me this 28th day of November, 1933. Osear Remberim, Notary Public, Kings County. Kings County Clerk's No. 610. Kings County Register's No. 5156. Commission expires March 30, 1935. (Seal.)

Affidavit

STATE OF NEW YORK,
County & City of New York, ss:

Vincent Scuderi, of the Borough of Brooklyn; County of Kings; City and State of New York, being duly sworn, deposes and says that during October, 1930, he was President of the Arrow Bottle Cap Corporation, having a place of business at 410 Morgan Avenue, Brooklyn, New York; that [fol. 1139] said corporation purchased from the A. Johnson Machine Works, Inc., of 251-259 Lee Avenue, Brooklyn, New York, a machine for spotting sealing pads of crown closure caps for bottles, which machine was delivered at the place of business of said Arrow Bottle Cap Corporation on or about the 4th day of October, 1930; that the method of spotting crown closure caps as carried out by said machine consisted in the heating of the sealing pads assembled in the crown caps, the crown caps then being successively presented to punch and die mechanism to cut a disk from a composite web of spotting or lining material impervious to moisture and having a coating of gutta percha bonded on one surface thereof, the spot or disk as it is cut by the punch

being in successive sequence deposited by the punch upon the heated pad of a crown cap, the heat of the cap pad rendering the gutta percha of the cut spot viscous or tacky and causing it to adhere to the cap pad, the crown cap with the spot or lining disk so assembled thereon then being presented to means to place the spot on the cap pad under heat and pressure to cause an intimate uniting of the spot to the cap pad, and from said heat and pressure means the cap is presented to means to place the spot and pad in the crown cap under pressure during the cooling period; that I have examined Patent No. 1,852,578, issued to John A. Johnson, April 5, 1932, for Method of and Apparatus for Assembling Linings in Receptacle Closure Caps; that the machine purchased by and delivered to the Arrow Bottle Cap Corporation on or about October 4, 1930, was constructed in accordance with the machine illustrated in the drawings of [fol. 1140] said Johnson patent and page 18 of the catalogue of the A. Johnson Machine Works, Inc., wherein the crown caps as illustrated in said patent are delivered from a hopper by a chute 14 to a rotatable disk 18, (Figures 2 and 3), and from said disk 18 to a pair of rails 24 to support the caps at opposite marginal portions of the skirt, the caps being fed along said rails by a rack 29; that the pads in the caps are preheated as they are fed along said rails by an electric heater 46 superposed to the travel of the caps by pivoted arms 47; that the caps as they are delivered from the heater 46 are fed relative to punch and die mechanism, as shown in Figure 2 and in detail in Figures 6 and 10 to 15 of said Johnson patent, the punch co-operating with the die to cut a spot or disk from a web, shown at W, of a material impervious to moisture and having gutta percha bonded to one surface thereof, the punch in successive sequence with the cutting of the disk from the web depositing it upon the preheated pad with the gutta percha face in contact therewith, the heat of the pad rendering the gutta percha viscous or tacky and causing it to adhere to the preheated cap pad; that the crown caps with the spots so assembled on the pad therein are then placed under heat and pressure to effect an intimate uniting of the spot with the cap pad by delivering the cap from the punch and die mechanism successively to heated plungers, as shown at 157 in Figure 1 and in detail in Figures 16 and 17, and the spots on the cap pads are then placed under pressure during the cooling

period by delivering the caps from the heated plungers 157 to plungers 177 carried by a table 168, as shown in Figures [fol. 1141] 1 and 2, the caps being delivered by the rack 29 from the supporting rails 24 to the table 168 and the spots on the cap pads engaged by the plungers 177; that the machine was set up for operation immediately upon delivery and was in operation up to the time of the dissolution of the Arrow Bottle Cap Corporation, at which time the machine was taken over by the Ajax Bottle Cap Corporation, of 12-26 Flushing Avenue, Brooklyn, N. Y., and I believe the machine is now in operation in the plant of the said Ajax Bottle Cap Corporation.

Vincent Scuderi.

Subscribed and sworn to before me this 2nd day of December, 1933. Ethel Zabell, Commissioner of Deeds. N. Y. Co. Clk's. No. 18, Reg. No. 44Z4. Commission expires April 12, 1934. (Seal.)

[fol. 1142]

Affidavit

STATE OF NEW YORK,
County of Kings, ss:

Rudolph V. Fusco, of the Borough of Brooklyn, County of Kings, City and State of New York, being duly sworn, deposes and says that he is employed in the Engineering Department of the A. Johnson Machine Works, Inc., located at 251-259 Lee Avenue, Brooklyn, New York; that said A. Johnson Machine Works, Inc., is the manufacturer of machines for spotting crown closure caps for receptacles wherein the method of spotting crown caps consists in the preheating of the pads assembled in the crown caps preparatory to the cutting of a spot or disk from the spotting material, said spotting material having bonded on one surface thereof gutta percha which is non-viscous or non-tacky at normal temperature and adapted to be rendered viscous or tacky when subjected to an elevated temperature, the crown caps with the preheated pads being presented to punch and die mechanisms for cutting a spot or disk from said spotting material and the punch in successive sequence with the cutting of the disk or spot depositing it upon the preheated pad of the crown cap, the heat of which pad renders the gutta percha coating of the spotting material viscous or tacky and causes it to adhere to the preheated

pad, the crown caps with spots assembled on the pads being fed from the punch and die mechanisms to means to place the spots and sealing pads of the crown caps under heat and pressure to effect an intimate uniting of the spot with the [fol. 1143] cap pad, after which they are subjected to pressure during the cooling period; that said machines are constructed in accordance with the disclosure in Patent No. 1,852,578, issued April 5, 1932, for Method of and Apparatus for Assembling Linings in Receptacle Closure Caps, the drawings forming a part of said patent having been made by a draftsman from working drawings and a machine for carrying out the method of spotting sealing pads on crown caps under my supervision; that machines were constructed in accordance with said patent to carry out the method as stated in claims 28, 29 and 30 of said patent during the months of June and July, 1928, during the months of February to July, 1929, and during the months of September-October, 1930, and said machines were delivered to purchasers and machines have been manufactured since in the shop of said A. Johnson Machine Works, Inc. for the spotting of sealing pads of crown caps for receptacles wherein the sealing pad assembled in the crown is preheated preparatory to the cutting and assembling of a lining spot thereon.

Rudolph V. Fusco.

Subscribed and sworn to before me this 10th day of November, 1933. Wm. W. Hulst, Notary Public, Nassau County. Certificate filed in Kings County. Clerk's No. 50, Kings Co. Regs. No. 5210. Commission expires March 30, 1935. (Seal.)

[fol. 1144]

Affidavit

STATE OF NEW YORK,
County of Kings, ss:

John W. Larson, of Bogota, in the County of Bergen and State of New Jersey, being duly sworn, deposes and says that he is in the employ of the A. Johnson Machine Works, Inc., that his duties include the entering of orders and looking after the shipping and delivering of products manufactured by said A. Johnson Machine Works, Inc.; that machines for spotting or assembling of linings on the sealing pads of crown caps for receptacles, as disclosed on page 18

of the catalogue of the A. Johnson Machine Works, Inc., were shipped as follows:

1 machine to Ferdinand Gutmann & Co., 168 - 39th Street, Brooklyn, New York, July 17, 1928;

1 machine to the Crown Cork & Seal Co., Inc., Baltimore, Maryland, March 7, 1929; 1 machine May 20, 1929 and three machines July 31, 1929, and

1 machine to the Arrow Bottle Cap Corporation, 410 Morgan Avenue, Brooklyn, New York, October 4, 1930.

John W. Larson.

Subscribed and sworn to before me this 10th day of November, 1933. Wm. W. Hulst, Notary Public, Nassau County. Certificate filed in Kings County. Clerk's No. 50, Kings Co. Regs. No. 5210. Commission expires March 30, 1935. (Seal.)

[fol. 1145]

Affidavit

STATE OF NEW YORK,
County of Kings, ss:

Charles W. Molander, Sr., of the Borough of Brooklyn, County of Kings, City and State of New York, being duly sworn, deposes and says that he is the Foreman in the shop of the A. Johnson Machine Works, Inc., located at 251-259 Lee Avenue, Brooklyn, New York; that prior to July 17, 1928, and up to the present time, he has supervised the construction of machines for assembling spots or lining disks upon sealing pads in crown bottle caps wherein the method of spotting the sealing pads consists in providing spotting material having an adhesive bonded to one surface thereof, cutting spots from said material and adhesively uniting the spots with the cap pads and is carried out by preheating the sealing pads in the caps prior to the cutting of the spots from the spotting material, the spots being cut from the spotting material by punch and die mechanism and the punch functioning in successive sequence with the cutting of the spot from the spotting material to deposit the cut spot upon and with the adhesive surface thereof in contact with the preheated cap pad, the heat of the pad rendering the adhesive viscous and effecting an adhesion of the spot to the cap pad, after which the spots on the pads are subjected to heat and pressure to effect an intimate uniting of the spot to the cap pad, and then subjected to

pressure during the cooling period; that the structure of the machines for carrying out the method of spotting sealing pads of crown caps as above set forth is in accordance with that illustrated in the reproduction of a photograph [fol. 1146] of the machine on page 18 of the catalogue of the A. Johnson Machine Works, Inc., attached to and forming a part of this affidavit; that I have examined patent No. 1,852,578, issued to John A. Johnson, April 5, 1932, for Method of and Apparatus for Assembling Linings in Receptacle Closure Caps, and said machines constructed under my supervision function to carry out the method of assembling linings or spots on sealing pads in crown bottle caps as is set forth in claims 28, 29 and 30 of said patent; that said machines constructed under my supervision were constructed in accordance with the machine in the drawings in said Johnson patent; that part of my duties consist in the supervision of getting ready for shipment the products manufactured by the A. Johnson Machine Works, Inc.; that machines in accordance with the machine illustrated on page 18 of the catalogue of the A. Johnson Machine Works, Inc., and in the drawings of said Johnson patent, were shipped to Ferdinand Gutmann & Co., 168 - 39th Street, Brooklyn, New York; to the Arrow Bottle Cap Corporation, 410 Morgan Avenue, Brooklyn, New York, and to the Crown Cork & Seal Co., Inc., Baltimore, Maryland.

Charles W. Molander, Sr.

Subscribed and sworn to before me this 10th day of November, 1933. Wm. W. Hulst, Notary Public, Nassau County. Certificate filed in Kings County. Clerk's No. 50, Kings Co. Regs. No. 5210. Commission expires March 30, 1935. (Seal.)

[fol. 1147]

Affidavit

STATE OF NEW YORK,

County of New York, ss:

Alfred Krafft, of Brooklyn, in the County of Kings, City and State of New York, being duly sworn, deposes and says that he is a Mechanical Engineer; that he made the original drawings constituting the drawings of Letters Patent No. 1,852,578, issued April 5, 1932, to John A. Johnson, for

Method and Apparatus for Assembling Linings in Receptacle Closure Caps; that at the request and with one, John O. Seifert, the attorney for the patentee of said patent, he went on or about January 22, 1929, to the shop of the A. Johnson Machine Works, Inc., located at 251-259 Lee Avenue, Brooklyn, New York, for the purpose of examining a machine from which and in conjunction with working drawings the original drawings of said patent were made; that while at the shop at said time there was explained to me by said patentee, John A. Johnson, the construction and operation of the machine and the manner in which the machine functioned to carry out the method of assembling lining disks upon sealing pads by first feeding the crown caps with the pads therein exposed to an electric heater to effect the heating of the sealing pads in the crown caps, then delivering the caps to punch and die mechanism to perform the step of cutting a disk from a web of lining material having an adhesive on one surface thereof, the punch positioning the cut disk on the heated sealing pad with the adhesive surface in contact therewith and the heat of the pad rendering the adhesive tacky or viscous and thus causing the lining disk to adhere to the sealing pad, the caps with the linings assembled on the cap pads then being successively subjected to the action of heated plungers to place the linings on the cap pads under heat and pressure to effect an intimate uniting of the linings to the cap pads, and from said heated plungers were delivered to cold plungers to place the linings on the pads in the caps under pressure during the cooling period; that linings were assembled on several hundred caps, the machine being first operated under power and then turned over manually in order that the functioning of the machine in carrying out the method could be clearly observed; that subsequently thereto I called several times at the shop of said A. Johnson Machine Works, Inc., to compare and go over the drawings with the structure of the machine with one, Rudolph V. Fusco of the Engineering Department of the A. Johnson Machine Works, Inc.

Alfred Krafft.

Subscribed and sworn to before me this 31st day of October, 1933. (Signed) Jack Frost, Notary Public, N. Y. County, No. 200. Expires March 30, 1934. (Seal.)

[fol. 1149]

DEFENDANT'S EXHIBIT V

April 22, 1935.

Memorandum on Visit to Mr. Johnson by B. C., Mr. William Warland and Mr. Frank T. Wentworth, April 18, 1935

The following is an extract of the conversation that took place:

Question. How long have you known of center-spot caps of any kind?

Mr. Johnson. I made a machine for a man by the name of Stewart about 26 years ago (here Mr. Johnson described the center-spot crown shown in the Nielson patent).

Question. Did you make a machine for that?

Mr. Johnson. Yes. Stewart was in Brooklyn at that time and later he moved to Millis.

Question. White Rock has used this cap ever since?

Mr. Johnson. Yes.

Mr. Johnson then stated that the crowns had natural-cork discs, composition-cork discs not yet being in use.

Question. When was the next spotting machine you made?

Mr. Johnson. I don't know.

Question. Was the next machine you made the one covered by your patent?

Mr. Johnson. Yes.

Question. Who next made center-spot caps?

Mr. Johnson. The first I heard from I think was McManus and Mundet and International Cork Company.

Question. About what date?

Mr. Johnson. My first record is the sale of my spotting [fol. 1150] machine. It took me about two years to develop the machine. I made five spotting machines for the Crown Cork & Seal Company in 1929.

Mr. Johnson was reminded of the affidavit he had made in the course of interference proceedings with Dr. Warth, and stated "Whatever I said in the affidavit in the interference proceedings is correct and is the best that I can remember."

Mr. Johnson stated that the first machine sold the Crown Cork & Seal Company was sold March 7, 1929; that a total of five machines were shipped to them; that the last machine was shipped July 31, 1929.

Mr. Johnson stated that the first of his spotting machines was sold to the Sociedad Industrial de Cuba on March 1, 1928; that the center spots were adhered to the cork disc in the cap by means of gutta-percha; and that one of his winding machines for adhering a strip of gutta-percha to a strip of metal foil was shipped on March 1, 1928, with the spotting machine. He stated further that right after that other concerns that the crown manufacturers buy material from furnished the foil and gutta-percha together. The winding machine did not take so long to develop as the spotting machine because it was simple. It took maybe two or three months.

Here there followed some discussion about the machines furnished to Ferdinand Gutmann & Co., both the machines for inserting center spots only and the machines for both assembling cork discs and inserting center spots.

Question. You said in your affidavit that you conceived [fol. 1151] the idea of this machine in 1925?

Mr. Johnson. Yes.

Question. If you conceived the idea of a machine there must have been a demand for the center spots?

Mr. Johnson. Yes.

Question. How did you know there was that demand?

Mr. Johnson. I knew of the crown that Stewart was making.

Beyond this Mr. Johnson was vague as to what center-spot crowns he may have seen in the market. He repeated what he had said about believing that Mundet and McManus and International had made center-spot crowns but stated that he could not remember clearly at this time any more any details in regard to this.

In the course of conversation Mr. Johnson showed Mr. Warland correspondence with Cushman, Bryant & Darby and also with Mr. Johnson's attorney, Seifert, showing that on Feb. 1, 1935, Mr. Johnson had given Crown Cork & Seal Company a list of the center-spot machines that he had sold and the parties to whom he had sold them, as follows:

1928—4

1929—9

1930—5

1931—3

1932—3
 1933—10
 1934—3

It developed in course of conversation that the eight machines sold to Ferdinand Gutmann & Co. and adapted to [fol. 1152] assembling cork discs into the crowns as well as inserting center spots were not included in the list that Mr. McManus (Johnson) furnished the Crown Cork & Seal Company. When asked why he had not included these machines in the list he stated that he did not know of any reason—he just happened to make up the list that way. The combination machines furnished to Ferdinand Gutmann & Co. he had given the Number 68, and he did not look up machine #68 when he furnished the list to Crown Cork & Seal Company.

While Mr. Johnson was busy in the shop his assistant, Mr. Larsen, read off from his book in which his record is kept, the following list of spotting machines sold by the Johnson Machine Works:

- 1 machine, March 1, 1928, Sociedad Industrial de Cuba.
- 1 " July 17, 1928, Ferdinand Gutmann & Co.
- 1 " Aug. 9, 1928, Giorgi Cicosse & Company, Brazil.
- 1 " Aug. 28, 1928, Ferdinand Gutmann & Co.
- 1 " March 7, 1929, Crown Cork & Seal Company.
- 1 " March 20, 1929, Consolidated Cork Company.
- 1 " March 28, 1929, Western Stopper Company.
- 1 " May 20, 1929, Crown Cork & Seal Company.
- 3 " July 31, 1929, Crown Cork & Seal Company.
- 1 " Dec. 19, 1929, Armstrong Cork Company.
- 1 " Dec. 29, 1929, Western Stopper Company.
- 1 " March 31, 1930, Hutchinson & Company.
- 1 " April 2, 1930, Usines A. Leenaards, Belgium.
- 1 " Sept. 15, 1930, Usines A. Leenaards, Belgium.
- 1 " Oct. 4, 1930, Arrow Bottle Cap Company (now either Ajax or Carvin Bottle Cap Company).

[fol. 1153]

- 1 machine, Oct. 16, 1930, Est. J. Schuyeroek, S. A., Belgium.
- 1 " Sept. 29, 1931, O. J. Calay & Cie, Belgium.
- 1 " Nov. 20, 1931, S. A. F. A. C., Buenos Aires.
- 1 " Dec. 14, 1931, Canadian-Crown Cork Company.

- 1 machine, Jan. 15, 1932, Vicente Cadillac & Cie,
Argentina.
- 1 " Feb. 25, 1932, Crown Cap Manufacturing Co.
- 1 " June 9, 1932, Wilson & Warden, Lt., Canada.
- 1 " Jan. 17, 1933, Armstrong Cork Co.
- 1 " April 11, 1933, Carvin Bottle Cap Company.
- 1 " June 6, 1933, Chicago Crown Company.
- 1 " July 3, 1933, Canadian Crown Cork Company.
- 1 " Oct. 3, 1933, Arco Bottle Cap Company.
- 3 " Oct. 23, 1933, Atlas Tack Company.
- 2 " Nov. 14, 1933, Atlas Tack Company.
- 1 " June 21, 1934, Burmeister Bros.
- 1 " July 26, 1934, Arco Bottle Cap Company.
- 1 " Dec. 31, 1934, Queensland Can Co., Australia.

BC:MF

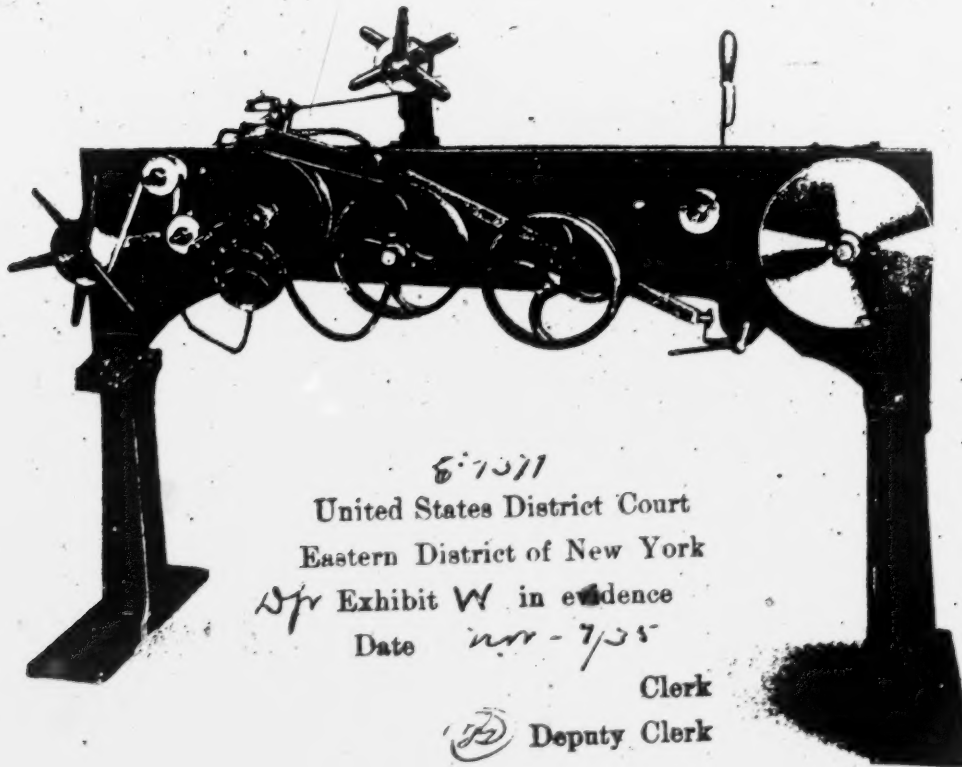
Telephone conversation between B. C. and Mr. Larsen
April 23rd, 1935.

One Winding Machine was shipped to the Crown Cork
& Seal Co. March 7th, 1929, together with the first spotting
machine shipped to them.

(Here follow 2 photos, side folios 1154 and 1155)

DEFENDANT'S EXHIBIT W

A. JOHNSON MACHINE WORKS, BROOKLYN, N. Y., U. S. A.



8-7571
 United States District Court
 Eastern District of New York
 For Exhibit W in evidence
 Date Nov - 7/35

Clerk

(12) Deputy Clerk

PATENT PENDING

No. 117 Johnson Winding Machine

This machine is made for adhering a gutta-percha lining to tin foil or any other suitable material for covering liners in bottle caps; either partly or the whole liner.

It is provided with electric heating unit and also a heating control in order to keep an even temperature which is required.

Size of driving pulley 9" diameter 1½" face
 Speed 250 R. P. M.
 Floor space 5'x1'
 Weight 350 lbs.

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PAGE

922B

1155

DEFENDANT'S EXHIBIT X

TELEPHONE 2479 WILLIAMSBURGH

OUR INVOICE NO. 3497

A. JOHNSON MACHINE WORKS

CROWNING
MACHINES

TOOLS, DIES AND SPECIAL MACHINERY

CROWN
AND CORK
MACHINERY

231-259 LEE AVENUE

CORNER LORIMER STREET

BROOKLYN, N. Y.

March 18th 1931

SOLD TO Ferdinand Gutmann & Company

168 - 39th Street, Brooklyn, N.Y.

NET CASH 30 DAYS

Mar. 16	1 Lining Machine changed for small Caps, as per sample.	300	00
	Motor Drive for above machine (motor supplied by Ferdinand Gutmann & Co.)	50	00

350 00

OK
JS7371
United States District Court
Eastern District of New YorkExhibit X in evidence
Date Mar 7/31Clerk
Deputy Clerk277/4 943
OK
APR 20 1931
1320

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PAGE

[fols. 1156-1157] DEFENDANT'S EXHIBIT Y

License Agreement

This agreement entered into at New York, New York, this 12th day of December, 1933, by and between Crown Cork & Seal Co., Inc., hereinafter termed "Licensor," and John A. Johnson of Woodhaven, New York, hereinafter termed "Licensee," witnesseth:

Whereas by virtue of an assignment by the said John A. Johnson, Licensor is the owner of United States Letters Patent No. 1,852,578 granted April 5, 1932 for "Method— and Apparatus for Assembling Linings in Receptacle Closure Caps," and

Whereas Licensor has granted a certain license under said patent to Licensee dated the 12th day of December, 1933, said license specifically excluding rights under any other patents owned by Licensor, and

Whereas Licensor is the owner of United States Letters Patent No. 1,788,260 granted January 6, 1931 for "Process for Producing Closures" and

Whereas Licensor has heretofore charged Licensee with infringement of said patent No. 1,788,260 by virtue of Licensee's manufacture and/or sale of the machine disclosed in United States Letters Patent No. 1,852,578 granted April 5, 1932, and

Whereas Licensee desires under its aforesaid patent No. [fol. 1158] 1,852,578 granted April 5, 1932, to manufacture said machines within the terms of said license without infringing the aforesaid patent No. 1,788,260 owned by Licensor,

Now Therefore, in consideration of Ten Dollars (\$10) from Licensee to Licensor in hand paid, the execution of the separate agreement dated the 12th day of December, 1933 and other good and valuable considerations hereby mutually acknowledged; the parties hereby agree as follows:

1. Licensor hereby grants to Licensee under its said patent No. 1,788,260 dated January 8, 1931 the license right which is necessary, and only such right, to permit Licensee to operate under its license granted under patent No. 1,852,578 dated April 5, 1932 by Licensor without infringing Licensor's patent No. 1,788,260 dated January 6, 1931.

2. It is mutually agreed that neither this license nor the acceptance of the assignment of said patent No. 1,852,578 granted April 5, 1932 waive any claims for past infringement which Licensor may have against Licensee under its

patent No. 1,788,260 nor any claim for past and future infringement which Licensee may have against users of machines manufactured and/or sold heretofore by Licensee under said patent No. 1,852,578 dated April 5, 1932.

3. Licensee hereby recognizes the validity of Licensor's patent No. 1,788,260 dated January 6, 1931 and agrees never to contest the validity thereof.

[fol. 1159] 4. Licensee further agrees that all machines manufactured under the license granted Licensee under patent No. 1,852,578 shall be properly marked with the number of said patent No. 1,788,260 dated January 6, 1931.

5. Licensor hereby grants to Licensee corresponding rights in foreign countries under any patent protection which may have been or may be granted upon the subject matter of United States Letters Patent No. 1,788,260, said rights to be subject to the same restrictions and conditions.

Crown Cork & Seal Co. Inc., Licensor, by Charles E. McManus, President. (Seal.)

Attest: J. J. Nagle, Secy.

John A. Johnson, Licensee.

Witness:- F. G. Fusting, John J. Darby.

STATE OF NEW YORK,

County of New York, ss:

On this 12th day of December, 1933 before me the undersigned, a notary public, appeared John A. Johnson to me known and known to me to be one of the parties identified in the foregoing instrument and he acknowledged that he [fol. 1160] executed the same of his own free will for the purposes set forth.

E. G. Mueller, Notary Public. Queens Co. Clerk's No. 2735, Register's No. 2674. Kings Co. Clerk's No. 203, Register's No. 4297. New York Co. Clerk's No. 730, Register's No. 4M460. Bronx Co. Clerk's No. 29, Register's No. 134M34. Commission expires March 30, 1934. (Seal.)

STATE OF NEW YORK,

County of New York, ss:

On this 12th day of December, 1933 before me the undersigned, a notary public, appeared Charles E. McManus to me known and known to me to be the President of the Crown Cork & Seal Co. Inc., in accordance with authority

duly given him by the Board of Directors of said company, and for the purposes therein set forth.

E. G. Mueller, Notary Public. Queens Co. Clerk's No. 2735, Register's No. 2674. Kings Co. Clerk's No. 203, Register's No. 4297. New York Co. Clerk's No. 730, Register's No. 4M460. Bronx Co. Clerk's No. 29, Register's No. 134M34. Commission expires March 30, 1934. (Seal.)

[fol. 1161] DEFENDANT'S EXHIBIT Z

(Letterhead of)

Crown Cork & Seal Company, Inc.

December 12th, 1933.

John A. Johnson, Esq., % A. Johnson Machine Works,
Brooklyn, N. Y.

DEAR MR. JOHNSON:

In view of the concern which you expressed today, with regard to our claim for damages against you as contributory infringer, by virtue of your infringement of the Crown Cork & Seal Company's patent No. 1,788,260 in manufacturing machines under patent No. 1,852,578 and selling the same, I desire to assure you that our action for damages will not be against you as contributory infringer in manufacturing and selling such machines; but against the users of the same who purchased the machines from you.

Please understand, however, that this does not constitute a waiver of the legal claim.

Very truly yours, Crown Cork & Seal Company, Inc.,
by Charles E. McManus, President.

(Notation:) Accepted this 12th day of Dec. 1933. John A. Johnson.

Witnesses—John J. Darby, F. G. Fusting.

[fol. 1162] DEFENDANT'S EXHIBIT AA

Assignment

Whereas John A. Johnson of Woodhaven, New York, is the owner of the entire right, title and interest in and to United States Letters Patent No. 1,852,578 dated April 5, 1932 for "Method and Apparatus for Assembling Linings in Receptacle Closure Caps" and

Whereas the said John A. Johnson warrants that he is the owner of said patent free of any encumbrances and outstanding licenses or other right thereunder and

Whereas Crown Cork & Seal Co. Inc., a New York corpora-

tion desires to acquire the entire right, title and interest in and to said Letters Patent,

Now Therefore in consideration of Ten (\$10) dollars by the said Crown Cork & Seal Co. Inc. paid to the said John A. Johnson, receipt of which is hereby acknowledged, the said John A. Johnson by these presents does sell, transfer and assign to the said Crown Cork & Seal Co. Inc. the entire right, title and interest in and to said Letters Patent as fully and entirely as the same would have been held and enjoyed by the said John A. Johnson if this assignment and sale had not been made,

And the said John A. Johnson by these presents does further assign to the Crown Cork & Seal Co. Inc. the right to recover for past infringement of said Letters Patent,

And he hereby covenants to execute any and all papers thought necessary by assignee to perfect and retain title in said assignee to said Letters Patents and/or reissue thereof,

[fol. 1163]- And the said John A. Johnson further covenants and agrees that he will at any time, upon request and without further remuneration communicate to the Crown Cork & Seal Co. Inc. its successors, assigns or legal representatives, any facts relating to the said invention and such patent, or to the history thereof known to him, and will testify as to the same in any interference or litigation, in support thereof, when requested so to do.

In Witness Whereof I, the said John A. Johnson have hereunto set my hand and seal this 12th day of December, 1933.

STATE OF NEW YORK,

John A. Johnson.

County of New York, ss:

On this 12th day of December, 1933 before the undersigned, a notary public, personally appeared John A. Johnson to me known and known to me to be the person described in, and who executed the foregoing assignment, and he duly acknowledged to me that he executed the same of his own free will for the use and purposes therein mentioned.

E. G. Mueller, Notary Public. Queens Co. Clerk's No. 2735, Register's No. 2674. Kings Co. Clerk's No. 203, Register's No. 4297. New York Co. Clerk's No. 730, Register's No. 4M460. Bronx Co. Clerk's No. 29, Register's No. 134M34. Commission expires March 30, 1934. (Seal.)

(Here follow 6 photos, side folios 1164-1169)

926A
1164

CABLE ADDRESS "NAMTUG" NEW YORK
TELEPHONE CONNECTION

NEW YORK SALESBROOMS
132 WEST 42ND ST.

FERDINAND GUTMANN & Co.



United States District Court
Eastern District of New York

Exhibit CC in evidence
Date Nov-8/30

Sold to

Insecta Inc.,
35 West 46th Street,
New York City.

in Cloth
Depot

Net, 30 days

Terms:
Payable in N. Y. Exchange.

Goods shipped at purchaser's risk.

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY
BUSH TERMINAL NO. 19 BROOKLYN, N. Y. Dec. 4, 1924.

SHIPPED TO

VIA Eastern Motor Transp. Co.

10,000	Special decoration Crowns "B"	\$ 1.85	18	50
	Tin Foil -parafine coated	\$ 1.15	11	50
	2 colors--green & black.			
	A/C/Cont 5/21/24.			
	F.O.B. delivered.			
100,000	Special decoration "B" without	\$ 1.85	185	00
	Tin Foil			

215 00

EC 6 1924

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.
All claims must be made within five days from receipt of Goods.

OK
[Signature]

926B

1165

Cable Address "HANTUS" New York
Telephone Connection*[Handwritten signature]*NEW YORK SALESROOMS
122 WEST 42ND ST.*Sold to*

Insecto Inc.

35 West 46th Street,

New York City.

Terms: Net, 30 days
Payable in N. Y. Exchange.

Goods shipped at purchaser's risk.

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY
BUSH TERMINAL NO. 19 BROOKLYN, N. Y. Dec. 11, 1924.

SHIPPED TO

VIA truck

10-14-139

500,000	Special decoration crowns "A" @ 1.85	555	00
95,000	Special decoration crowns "B" @ 1.85	175	75
	Tin Foil-paraffine coated 95000 @ 1.15	109	25

2 colors--green & black.

A/C/Cont 5/21/24.
F.O.B. delivered.

"A"
 #1/8--25000
 13/16--25000
 500,000

"B"
 #30/32--25000
 #33--20000
 95,000

840 004

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.
All claims must be made within five days from receipt of goods.

1166

CABLE ADDRESS "NAMTUS" NEW YORK
TELEPHONE CONNECTION

NEW YORK SALEROOMS
132 WEST 42ND ST.

FERDINAND GUTMANN & CO.

“THE PATENTERS OF THE WORLD”

“THE PATENTERS OF THE WORLD”

Sold to

New York, N.Y.

Term: Net cash 30 days
Payable in N. Y. Exchange.

Goods shipped at purchaser's risk.

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY
BUSH TERMINAL NO. 19 BROOKLYN, N. Y. Jan. 27, 1926

SHIPPED TO

VLA

84,750 156	Special decoration crowns - "B"	1.65	156	79 -		
453 6712 847 1567	Tin foil, paraffine coated	1.80	152	55		
84750 156	4875 Shipped 1/22/25 by messenger. 2 packages				309	34
84750 156	4875 Shipped 1/22/25 by messenger. 1 package					
84750 156	5000 Shipped 1/24/25 by Bush Truck. Case #3					
84750 156	5000 Shipped 1/27/25 by Brodie's Truck. Cases #4/5					
	F.O.B. Destination					
	ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE. All claims must be made within five days from receipt of goods.					

1167

CABLE ADDRESS "NAMTUG" NEW YORK
TELEPHONE CONNECTION

NEW YORK SALESBROOMS
132 WEST 42ND ST.

New York City

Goods shipped at purchaser's risk.

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY
BUSH TERMINAL NO. 19 BROOKLYN, N. Y.

Feb. 5, 1925

VIA Bush Truck

SHIPPED TO		QUANTITY		UNIT PRICE		TOTAL	
41,500	Special decoration "B" crowns Tin foil-paraffine coated	1.85	76	1.80	78	151	48
A/C Cont 5/21/24							
Case #6 - 25,000							
" #7 - 15,500							
P.O.B. delivered							
<p>ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.</p> <p>All claims must be made within five days from receipt of Goods.</p>							

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.
All claims must be made within five days from receipt of Goods.

926E

1168

DEFENDANT'S EXHIBIT F F

CABLE ADDRESS "NAMTUG" NEW YORK
• TELEPHONE CONNECTION

FERDINAND GUTMANN & Co.

NEW YORK SALESBROOMS
132 WEST 42ND ST.

Referred To

Hall

Sold to

Inecto Inc.

Approved By

Extension O.K.

33 West 46th Street.

Acct Charged

New York, N.Y.

Terms: Net cash 30 days.
Payable in N. Y. Exchange.

Goods shipped at purchaser's risk.

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY
BUSH TERMINAL NO. 19 BROOKLYN, N. Y. March 4, 1926.

SHIPPED TO

VIA

Bush truck

64,200	Special decoration "B" caps received Ml.80 from you to have tin-foil inserted.	115 56	115 56
	Case #7--1 case of 25,000		
	Case #8--1 case of 25,000		
	Case #9--1 case of 14,200		
	This leaves a balance of 285,800 of which 35,800 are to have tin-foil inserted.		
	P.O.B. destination.		
	ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE. All claims must be made within five days from receipt of Goods.		

MAR 6 1926

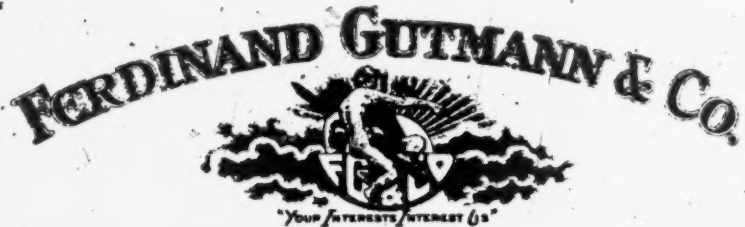
O.K.
Hall

926F

1169

DEFENDANT'S EXHIBIT G G

CABLE ADDRESS "NANTUS" NEW YORK
TELEPHONE CONNECTION



NEW YORK SALESBROOMS
132 WEST 42ND ST.

Sold to

2/10 N/30

Terms
Payable in N. Y. Exchange.

Goods shipped at purchasers risk.

Ireco Inc.,

33 West 46th St.,

New York, N.Y.

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY
BUSH TERMINAL NO. 19 BROOKLYN, N. Y. 19, 1920.

SHIPPED TO

VIA Bush truck

160,000 Special decoration "B" caps received
from you, to have tin-foil inserted
M. 1.80
Cases #1/6-- 6 cases of 25,000 each
This leaves a balance of 350,000 of
which 100,000 are to have tin foil
inserted.
F.O.B. destination.

270 00

270 00 y

*OK'd
C. Hall*

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.
All claims must be made within five days from receipt of Goods.

[fol. 1170] DEFENDANT'S EXHIBIT HH

Inecto, Inc., 33-35 West 46th Street, New York

Office of the Managing Director

February 4, 1925.

Ferdinand Gutmann & Co., Bush Terminal No. 19, 39th St.
& 2nd Ave., Brooklyn, N. Y.

Att. Mr. Jesse Gutmann

This is to confirm our verbal instructions to you advising that you finish up 250,000 "B" caps returned to you by lining them with tin foil gutta-percha combination.
Very truly yours, Inecto, Inc., R. L. Evans.

RLE-MG.

22/25,000

1/13,500 563,500

[fol. 1171] DEFENDANT'S EXHIBIT II

Inecto, Inc., 33-35 West 46th Street, New York

Office of the Managing Director

March 9, 1925.

GENTLEMEN:

Attention Jesse Gutmann

Confirming our telephone conversation of this morning referring to your letter of yesterday, we do not want half an order (that is 125,000 B caps) supplied to us without paraffine. However, we are anxious to get just as soon as possible several hundred B caps without gutta percha but with tin foil inserted into cork with a shallow slot where no paraffine has been applied.

Very truly yours, R. L. Evans.

Ferdinand Gutmann & Co., Bush Terminal #19, 39th St.
& 2nd Ave., Brooklyn, New York.

BLANK

PAGE

1172

CABLE ADDRESS "NAMTUG" NEW YORK
TELEPHONE CONNECTION

NEW YORK SALESBROOMS
132 WEST 42ND ST.

FERDINAND GUTMANN & Co.
67-71
United States District Court
Eastern District of New York
"Your INTERESTS INTEREST US"

Exhibit in evidence

Date Nov 7 - 1941

Sold to

Inco to Inc.,

Clerk

33 West 46th St...

Deputy Clerk

New York, N.Y.

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY

BUSH TERMINAL NO. 19 BROOKLYN, N. Y. March 26, 1925.

SHIPPED TO

VIA ~~rush~~ truck.

25,000 Special Decoration. "B" caps returned by you to have tin-foil inserted. M 1.15 Paraffine coated without Gutta Percha.

28	75	28	75
----	----	----	----

1 case #1.

P.O.B. destination.

Hall

Chick

MAR 28 1965

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE
All claims must be made within five days from receipt of Goods.

930

1173

DEFENDANT'S EXHIBIT K K

CABLE ADDRESS "NANTUS" NEW YORK
TELEPHONE CONNECTION

NEW YORK SALESPROOMS
132 WEST 42ND ST.

FERDINAND GUTMANN & Co.



6/37/
United States District Court
Eastern District of New York

NY Exhibit ~~XX~~ in evidence

Sold to

Inecto Inc.,

Date *un 1/01*

38 West 46th St.,

New York, N.Y.

Clerk

Deputy ~~Clark~~

Terms: Net, 30 days.
Payable in N. Y. Exchange.

Goods shipped at purchaser's risk

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY
BUSH TERMINAL NO. 19 BROOKLYN, N. Y. March 26, 1925.

SHIPPED TO

VIA

Express

25,000 Special decoration "B" caps received
from you to have tin foil inserted.
Paraffine coated without Gutta Percha
\$ 1.15

- 28 75 ✓

28 75

1 Case #10.

P.O.B. destination.

Referred To
Approved By
Extension C.K.
Acct. Charged

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE
All claims must be made within five days from receipt of Goods.

931

DEFENDANT'S EXHIBIT L L

1174

CABLE ADDRESS "NAMTUS" NEW YORK
TELEPHONE CONNECTION

FERDINAND GUTMANN & Co.

NEW YORK SALESROOMS
132 WEST 42ND ST.E 72 11
United States District Court
Eastern District of New York

Exhibit L.L. in evidence

Date Nov. 1925

Clerk
Deputy Clerk

Sold to

Inesto, Inc.,

33 W. 46th Street,

New York, N.Y.

Net cash 30 days.

Terms:
Payable in N. Y. Exchange.

Goods shipped at purchaser's risk.

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY

BUSH TERMINAL NO. 19 BROOKLYN, N. Y. April 14, 1925.

SHIPPED TO

VIA Bush truck.

204450 Special decoration "B" caps returned
by you to have tin-foil inserted.Paraffine coated without gutta percha
\$ 1.15

235 12

235 12

Cases #3/8-6 cases at 25,000 each=150,000 referred to

#9 23,300

#10 20,600 approved By

#11 10,550

204,450 Extension O.K.

9 Cases.

Acct Charged

F.O.B. delivered.

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

All claims must be made within five days from receipt of Goods.

1175

NEW YORK SALESDROOMS
122 WEST 42ND ST.

1925
9

FERDINAND GUTMANN & Co

FIELD

"YOUR INVESTMENT INTEREST OURS"

Sold to

Net cash 30 days.
Terms:
Payable in N. Y. Exchange.
 Goods shipped at purchaser's risk.

Inesto, Imo.

33 W. 46th Street.

New York, N.Y.

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY
BUSH TERMINAL NO. 19 BROOKLYN, N. Y. Apr 11 6, 1925.

SHIPPED TO

VIA MESSANGER.

[illegible]

933

1176

CABLE ADDRESS "HANTUS" NEW YORK
TELEPHONE CONNECTION

FERDINAND GUTMANN & Co.



NEW YORK SALESROOMS
152 WEST 42ND ST.

Sold to

Net cash 30 days.

Insecto Ino.,

33 West 46th St.,

New York, N.Y.

Terms:
Payable in N. Y. Exchange.

Goods shipped at purchaser's risk.

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY
BUSH TERMINAL NO. 19 BROOKLYN, N.Y. March 27, 1925.

SHIPPED TO

VIA Truck.

25,000	Special decoration "B" caps returned by you to have tin-foil inserted.				
115	Paraffine coated without gutta percha	28	75	28	75
575					
230					
4875	F.O.B. Destination				
	1 case #2				
	Referred to				
	Approved By				
	Extension O				
	Acct Charged				

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.
All claims must be made within five days from receipt of Goods.

934

1177

CABLE ADDRESS "NANTUS" NEW YORK
TELEPHONE CONNECTION

NEW YORK SALESDROOMS
192 WEST 42ND ST.

FERDINAND GUTMANN & Co.



"Your Interests, Our Business"

Sold to

Insecto Inc.,

33 W. 46th St.,

New York, N.Y.

Price

Acct. C.

Terms: 2/10 N/30
Payable in N. Y. Exchange.

Goods shipped at purchaser's risk.

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY
BUSH TERMINAL NO. 19 BROOKLYN, N. Y. April 30, 1925.

SHIPPED TO

VIA Bush truck.

8200	Crown openers, decoration as had	\$6.00	49	20		
	A/C Contract 4/25/24.					
	Case #5322/1					
19500	Insecto B crowns with Tin Foil	\$1.15	22	43		
	Your own goods.					
	Case #12.					
	F.O.B. destination.					
ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE. All claims must be made within five days from receipt of Goods.						

MAY 1 1925

71 63

144

935

1178

CABLE ADDRESS "WANTUS" NEW YORK
TELEPHONE CONNECTION

FERDINAND GUTMANN & Co.



Referred To

Received By

"YOUR PAYMENTS INTEREST (if extension O.K.)"

Amount Charged

NEW YORK SALESROOMS
152 WEST 42ND ST.

Sold to

Iracto Inc.,

33 West 46th Street,

New York City.

6-1925

Net cash 30 days.

Terms:
Payable in N. Y. Exchange.

Goods shipped at purchaser's risk.

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY

BUSH TERMINAL NO. 19 BROOKLYN, N. Y. May 15, 1925.

SHIPPED TO

VIA

Bush track.

25000 Special decoration "A" Crowns \$ 2.50

62 50

Natural cork discs, no tin center.
1 case #1.

25000 Special decoration "B" Crowns \$ 3.65

91 25

Tin center- paraffine coated.
1 case #51.

Special alloy tin foil is to be used.

F.O.B. delivered.

153 75

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.
All orders must be made within five days from receipt of goods.

145

4603

936

1179

CABLE ADDRESS "NAMTUS" NEW YORK
TELEPHONE CONNECTION

FERDINAND GUTMANN & Co.



NEW YORK SALESBROOMS
132 WEST 42ND ST.

Sold to

Inecto, Inc.

33 W. 46th St.,

New York, N.Y.

Terms: Net 30 days.
Payable in N. Y. Exchange.

Goods shipped at purchaser's risk

ADDRESS ALL MAIL TO OUR MAIN OFFICE AND FACTORY
BUSH TERMINAL NO. 19 BROOKLYN, N. Y. May 18th 1925

SHIPPED TO

VIA Bush Terminal

75,000	Special Decoration "A" Crowns Natural Cork Discs - No tin center	\$ 2.50	187	50
Cases #2/4 - 3 cases 25,000 each				

75,000	Special Decoration "B" Crowns Paraffine coated - Tin center	\$ 3.65	273	75
Cases #52/54 - 3 cases 25,000 each				

F.O.B. Destination

Referred To *Miles*
Approved By *[Signature]*
Extension O.K. *[Signature]*
Acct. Charged *[Signature]*

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE
All orders must be made within five days from receipt of BUSH

Wm. O. H. Tumb...

*New York
36
44
73*

461 25

44

[fol. 1180] DEFENDANT'S EXHIBIT MM

Feb. 19, 1925.

Inecto, Inc., 35 W. 46th Street, New York City.

Attention Mr. Evans

DEAR MR. EVANS:

Confirming our personal conversation, I am, as per your request, putting our suggestions in writing with reference to crown contract.

Your contract, dated May 21st, 1924, called for ten million natural cork crowns, to be taken at the rate of 830,000 crowns per month, beginning July 21st, 1924. It was on this basis, which would have guaranteed us a continual running on our machine, that we made the low price of \$1.89 per thousand base price on this contract. Our records show that, for the first six months, that is, up to January 22nd, 1925, you have taken only 1,725,650 caps. This has resulted in a serious disarrangement of our manufacturing plans, as well as a miscalculation as to our cost and profit on this order, as you can readily realize. This is due, firstly, to the fact that we have not been able to run steadily, as your requirements have been far below contracted quantity per month, and we did not want to make up all these goods as contracted for and dump them on you. Secondly, we have been under a considerable handicap and cost, as you know, due to the many experiments which we very gladly undertook in an effort to overcome your very difficult problems. Thirdly, we have been put to a very [fol. 1181] considerable expense in the necessary changes of machinery required for the above purposes.

In view of these facts, and in an endeavor to be perfectly fair with your very esteemed firm, and at the same time, fair to ourselves, it is our suggestion that without reference to the shipments already made and delivered, the balance of your contract be billed at a base price of \$2.50 per thousand, to be taken as needed, but not less than 300,000 per month (instead of the 830,000 originally contracted for) and that on this basis, the price should be \$2.50 per thousand base. To this must of course be added the price of \$1.80 per thousand, which, as you know, is

the cost of running a crown through a second time for the purpose of affixing the specially prepared tin foil and special quality Gutta Percha covered with paraffin.

I sincerely trust that you will not misinterpret this request, as you know that up to the present time we have very willingly co-operated without question of finances being involved at all, but it is quite evident that the original quantity will be far in excess of your requirements, and in justice to yourselves, as well as to us, I am bringing this matter up at this time. May I ask that it receive your usual courteous and careful attention?

Very truly yours, Ferdinand Gutmann & Co.

JG:DG.

[fol. 1182]

DEFENDANT'S EXHIBIT NN

(Letterhead of)

Bishop Gutta-Percha Co.

New York, January 6th, 1925.

Ferdinand Gutmann & Company, Bush Terminal Bldg #19,
Brooklyn, N. Y.

Att. Mr. Cohn

GENTLEMEN:

As per your request we are pleased to confirm prices given over Phone this morning.

9/10 Brown in bolt or on rolls 36" wide \$.85 per lb.

" " on spools 1" or wider, 1 lb. on a spool \$.95 per lb.

" " on spools 1" or $\frac{3}{4}$ ", $\frac{1}{2}$ lb. on a Spool \$1.05 per lb.

" Surgical in bolt or on rolls 36" wide \$2.00 per lb.

" " on small rolls 6" or wider \$2.50 per lb.

These prices are all F. O. B. New-York City.

If ordered in quantities of 50 pounds or more for shipment at one time we will allow you a discount 10% from the purchase price.

Very truly yours, Bishop Gutta-Percha Company,
A. C. Delanay, Sales Manager, per M. R.

DEFENDANT'S EXHIBIT O O

1183

939

BISHOP GUTTA-PERONA CO.

INSULATED WIRE AND GUTTA-PERONA GOODS

420 to 430 East 25th Street, New York, N. Y.

DATE JAN 7 1925



SOLD TO

INVOICE

YOUR ORDER

YOUR REQ.

PERDINAND GUTMANN CO.
Bush Terminal Bldg. #19
Bklyn, N.Y.

United States District Court
Eastern District of New York

Exhibit O O in evidence

Date

TERMS: Net 30 days, 2% 10 days end of month.

Invoice 5687-1

Cust. No.

4-lbs. 9/10 36"

Bolt Surgical Tissue

@ 2.00 lb. Net

8.00

5¢ lb. net for cutting

.20

8.20

Call F.O.B. NY

(E) Deputy Clerk

POSITIVELY NO CASH
DISCOUNT ALLOWED
FEB 10 1925

AFTER

NO DISCOUNT ALLOWED AFTER

DEFENDANT'S EXHIBIT P P

BISHOP GUTTA-PERONA CO.

INSULATED WIRE AND GUTTA-PERONA GOODS

420 to 430 East 25th Street, New York, N. Y.

DATE DEC 31 1924



SOLD TO

INVOICE

YOUR ORDER

YOUR REQ.

PERDINAND GUTMANN
19 Bush Terminal
Bklyn, N.Y.

United States District Court
Eastern District of New York

Exhibit P. P in evidence

Date

Clerk

(B) Deputy Clerk

Invoice 5593-1

1-sq yd 9/10

I.B. Tissue

1-sq yd ditto

No charge

F.O.B. NY

NO DISCOUNT ALLOWED AFTER

1184 940

DEFENDANT'S EXHIBIT Q Q

BISHOP QUTTA-PERONA CO.
INSULATED WIRE AND QUTTA-PERONA GOODS
420 to 430 East 25th Street, New York, N. Y.

SOLD TO

INVOICE

YOUR ORDER

YOUR REG.

FERDINAND GUTMANN
Bush Terminal Bldg #19
Bklyn, N.Y.



TERMS: Net 30 days, 2% 10 days end of month.

Invoice 6299-1
Just. No. Phone 104-lbs. 9/10 Roller Surgical Tissue
@ 2.50 lb. ---5% 24.35

CALL P.O.B. NY
United States District Court
Eastern District of New York

Exhibit Q Q in evidence
Date

Clerk
Deputy Clerk

206
3
CR13

11/1
FEB 9-1925
61719

POSITIVELY NO CASH
DISCOUNT ALLOWED
FEB 10 1925

NO DISCOUNT ALLOWED AFTER

DEFENDANT'S EXHIBIT R R

BISHOP QUTTA-PERONA CO.
INSULATED WIRE AND QUTTA-PERONA GOODS
420 to 430 East 25th Street, New York, N. Y.

SOLD TO

INVOICE

YOUR ORDER

YOUR REG.

FERDINAND GUTMANN CO.
Bush Terminal Bldg. #19
Bklyn, N.Y.

United States District Court
Eastern District of New York
Exhibit R R in evidence
Date

11/1

TERMS: Net 30 days, 2% 10 days end of month.

Deputy Clerk



Invoice 6560-1
Cust. No. Mr. John 21-lbs. 9/10 Roller Surgical Tissue
@ 2.50 lb. ---5% 49.87 /
P.O.B. NY

ENTERED
7/11
PAID 6761-6 874
CHECK NO. 61719

POSITIVELY NO CASH
DISCOUNT ALLOWED
FEB 10 1925

NO DISCOUNT ALLOWED AFTER

BLANK

PAGE

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PAGE

DEFENDANT'S EXHIBIT S S

1185

941

BISHOP GUTTA-PERONA CO.

INSULATED WIRE AND GUTTA-PERONA GOODS

420 to 430 East 25th Street, New York, N. Y.

SOLD TO

INVOICE

YOUR ORDER

YOUR REQ.

FERDINAND GUTMANN CO.
Bush Terminal Bldg. #19
Bklyn, N.Y.

United States District Court

Eastern District of New York

Exhibit SS in evidence

Date 1/31

DATE FEB 11 1925



TERMS: Cash 10 days, 2%, 10 days end of month.

Invoice 6792-1
Inst. No. Phone

Deputy Clerk

9 1/2-lb.. 9/10 Bolt Surgical Tissue cut 12" wide
@ 2.00 lb. Net 19.50

5 1/2 lb. net for cutting .49 19.99 ✓

Call F.O.B. NY

Debit credit 1/13/25 - 5 lb. returned 0.25 net

POSITIVELY NO CASH
DISCOUNT ALLOWED

AFTER MAR 10 1925

227
2
CRB

1183

6/1/25

CRB

NO DISCOUNT ALLOWED AFTER

BISHOP GUTTA-PERONA CO.

INSULATED WIRE AND GUTTA-PERONA GOODS

420 TO 430 EAST 25TH STREET, NEW YORK

INVOICE

YOUR ORDER

YOUR REQ.

Ferdinand Gutmann Co.,
19 Bush Terminal,
Bklyn. N.Y.



8420

2/10/25..

Mdse. returned.

11.87

5 lbs. 12 Roller Surg. Tissue returned @ 2.50
Less 5%

REC'D
FBI
EX-107
FEB 11 1925
671143

CREDIT MEMO.

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PAGE

DEFENDANT'S EXHIBIT T T

1186

942

BISHOP GUTTA-PERCHA COMPANY

420 EAST 25TH STREET, NEW YORK, N. Y.

DATE MAR 23 1928

SOLD TO

FERDINAND GUTMAN CO.,
168-39th Street, United States District Court
Bklyn, N.Y. Eastern District of New York

Rush Terminal #19. Exhibit T. in evidence
Date



WE HEREBY GUARANTEE THAT THE MERCHANDISE COVERED BY THIS INVOICE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FEDERAL CHILD LABOR ACT OF SEPTEMBER 1, 1916

Deputy Clerk

7061-1

INVOICE

YOUR ORDER none

1 1/2" 'L' Spooled Indian Brand Tissue

YOUR REQ.

@ 1.25 lb. net.

1.25

FOB NY VIA CABLE

TERMS

INTL. ORDER

APR 4 1928

POSITIVELY NO CASH
DISCOUNT ALLOWED

AFTER APR 10 1928

TERMS: NET 30 DAYS, 2 1/2% 10 DAYS END OF MONTH, EXCEPT CASES WHICH ARE NET. NO DISCOUNT ALLOWED AFTER

BISHOP GUTTA-PERCHA COMPANY

420 EAST 25TH STREET, NEW YORK, N. Y.

DATE JUL 17 1928

SOLD TO

FERDINAND GUTMAN CO.,
168-39th St., Rush Terminal #19
Bklyn, N.Y.



PURE RUBBER GUM SHEET

WE HEREBY GUARANTEE THAT THE MERCHANDISE COVERED BY THIS INVOICE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FEDERAL CHILD LABOR ACT OF SEPTEMBER 1, 1916

7661-1

INVOICE

YOUR ORDER

2 1/2" Spooled I.B. Tissue @ 1.25 lb-10%

2.25

YOUR REQ.

FOB NY

REC'D

PRICE

EATEN

ENTERED

PAID

CHECK NO

AUG 7 1928

95645

POSITIVELY NO CASH
DISCOUNT ALLOWED

AFTER

AUG 10 1928

TERMS: NET 30 DAYS, 2 1/2% 10 DAYS END OF MONTH EXCEPT CASES WHICH ARE NET. NO DISCOUNT ALLOWED AFTER

943

1187

BISHOP GUTTA-PERCHA COMPANY

420 EAST 25TH STREET, NEW YORK, N. Y.

SOLD TO

FERDINAND GUTMAN CO.,
168-39th St., Bush Terminal #19.
Bklyn, N.Y.

DATE

8261 21 7th



PURE RUBBER GUM SHEET

WE HEREBY GUARANTEE THAT THE MERCHANDISE COVERED BY THIS INVOICE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FEDERAL CHILD LABOR ACT OF SEPTEMBER 1, 1916

INVOICE 7661-1

YOUR ORDER

YOUR REQ.

10# 1" Spooled I.B. Tissue
@ 1.25 lb-10%
Postage

11.25
.25

11.50 ✓

FOB NY VIA P.P.INS.

REC'D 10/2 4/00
PAID
CHECK
CASH
CREDIT
BY PAID
AUG 7 1928
10645

POSITIVELY NO CASH
DISCOUNT ALLOWED
AUG 10 1928
AFTER

TERMS: NET 30 DAYS, 2% 10 DAYS END OF MONTH, 5% 5 DAYS WHICH ARE NET. NO DISCOUNT ALLOWED AFTER

BISHOP GUTTA-PERCHA COMPANY

420 EAST 25TH STREET, NEW YORK, N. Y.

SOLD TO

FERDINAND GUTMAN CO.,
168-39th Street,
Bush Terminal #19.
Bklyn, N.Y.

DATE

JUL 28 1928



PURE RUBBER GUM SHEET

WE HEREBY GUARANTEE THAT THE MERCHANDISE COVERED BY THIS INVOICE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FEDERAL CHILD LABOR ACT OF SEPTEMBER 1, 1916

INVOICE 7661-1

YOUR ORDER

YOUR REQ.

68# 1" Spooled I.B. Tissue
@ 1.25 lb-10%

76.50 ✓

FOB NY

REC'D 8/1
PAID
CHECK
CASH
CREDIT
BY PAID
AUG 7 1928
10645

POSITIVELY NO CASH
DISCOUNT ALLOWED
AUG 10 1928
AFTER

TERMS: NET 30 DAYS, 2% 10 DAYS END OF MONTH, 5% 5 DAYS WHICH ARE NET. NO DISCOUNT ALLOWED AFTER

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PAGE

944
1188

BISHOP GUTTA-PERCHA COMPANY

420 EAST 25TH STREET, NEW YORK, N. Y.

SOLD TO

FERDINAND GUTMAN CO.,
168-39th St.,
Bush Terminal 19
Bklyn, N.Y.

DATE AUG 30 1928



PURE RUBBER GUM SHEET

WE HEREBY GUARANTEE THAT THE MERCHANDISE COVERED BY THIS INVOICE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FEDERAL CHILD LABOR ACT OF SEPTEMBER 1, 1916

INVOICE 7661-4

YOUR ORDER

YOUR REQ.

100# 1" Spooled I.B. Tissue
@ 1.25 Lb-10%

112.50 ✓

FOB NY

RECEIVED

PAID

DATE

ENTERED

FILED

RECEIVED

SEP 12 1928

75861

POSITIVELY NO CASH
DISCOUNT ALLOWED

AFTER SEP 10 1928

TERMS: NET 30 DAYS, 2% 10 DAYS END OF MONTH EXCEPT CASES WHICH ARE NET. NO DISCOUNT ALLOWED AFTER

BISHOP GUTTA-PERCHA COMPANY

420 EAST 25TH STREET, NEW YORK, N. Y.

SOLD TO

FERDINAND GUTMAN CO.,
168-39th St., -Bush Terminal #19
Bklyn, N.Y.

DATE SEP 12 1928



PURE RUBBER GUM SHEET

WE HEREBY GUARANTEE THAT THE MERCHANDISE COVERED BY THIS INVOICE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FEDERAL CHILD LABOR ACT OF SEPTEMBER 1, 1916

INVOICE 7661-1

YOUR ORDER

YOUR REQ.

25# 1" Spooled I.B. Tissue
for foil caps @ 1.25 Lb-10%

28.12

FOB NY VIA C.A.L.

RECEIVED
PAID
DATE
ENTERED
FILED
OCT 10 1928
76051

POSITIVELY NO CASH
DISCOUNT ALLOWED

AFTER OCT 10 1928

TERMS: NET 30 DAYS, 2% 10 DAYS END OF MONTH EXCEPT CASES WHICH ARE NET. NO DISCOUNT ALLOWED AFTER

945

1189

BISHOP GUTTA-PERCHA COMPANY

420 EAST 25TH STREET, NEW YORK, N. Y.

SOLD TO

FERDINAND GUTMAN CO.,
168-39th St.-Bush Terminal #19
Bklyn, N.Y.

DATE SEP 13 1928

AND
PURE RUBBER GUM SHEET

WE HEREBY GUARANTEE THAT THE MERCHANDISE COVERED BY THIS INVOICE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FEDERAL CHILD LABOR ACT OF SEPTEMBER 1, 1916

INVOICE 7661-12

YOUR ORDER

10# 1" Spooled I.B. Tissue for
foils caps @ 1.25 lb-10%

11.25

YOUR REQ.

FOB NY

POSITIVELY NO CASH
DISCOUNT ALLOWED

AFTER OCT 10 1928

TERMS: NET 30 DAYS, 2% 10 DAYS END OF MONTH, EXCEPT CASES WHICH ARE NET. NO DISCOUNT ALLOWED AFTER

BISHOP GUTTA-PERCHA COMPANY

420 EAST 25TH STREET, NEW YORK, N. Y.

SOLD TO

FERDINAND GUTMAN COMPANY,
168-39th St.,
Brooklyn, N.Y.

DATE SEP 19 1928

AND
PURE RUBBER GUM SHEET

WE HEREBY GUARANTEE THAT THE MERCHANDISE COVERED BY THIS INVOICE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FEDERAL CHILD LABOR ACT OF SEPTEMBER 1, 1916

INVOICE 7661-7 25# 1" Spooled I.B. Tissue

YOUR ORDER

1.25 lb.-10%

28.12

YOUR REQ.

FOB NY

168-39th St. - Bush Terminal #19.

POSITIVELY NO CASH
DISCOUNT ALLOWED

1146
OCT 10 1928
76052

TERMS: NET 30 DAYS, 2% 10 DAYS END OF MONTH, EXCEPT CASES WHICH ARE NET. NO DISCOUNT ALLOWED AFTER

946

1190

BISHOP GUTTA-PERCHA COMPANY

420 EAST 25TH STREET, NEW YORK, N. Y.

SOLD TO FERDINAND GUTMAN COMPANY,
168-39th Street,
Brooklyn, N.Y.

DATE SEP 21 1928



PURE RUBBER GUM SHEET

WE HEREBY GUARANTEE THAT THE MERCHANDISE COVERED BY THIS INVOICE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FEDERAL CHILD LABOR ACT OF SEPTEMBER 1, 1916

INVOICE 7661-7

YOUR ORDER 160# 1" Spooled I.B. Tissue
@ 1.25 lb.-10%

180.00

YOUR REQ.

FOB NY VIA CALL
to Bush Terminal #19

REC'D 80/433
PAID
EXCH.
INT'L
OCT 10 1928
16052

POSITIVELY NO CASH
DISCOUNT ALLOWED
AFTER OCT 10 1928

TERMS: NET 30 DAYS, 2% 10 DAYS END OF MONTH, EXCEPT CASES WHICH ARE NET. NO DISCOUNT ALLOWED AFTER

BISHOP GUTTA-PERCHA COMPANY

420 EAST 25TH STREET, NEW YORK, N. Y.

SOLD TO

FERDINAND GUTMAN Co.,
168-39th Street,
Brooklyn, N. Y.
Bush Terminal #19

DATE SEP 26 1928



PURE RUBBER GUM SHEET

WE HEREBY GUARANTEE THAT THE MERCHANDISE COVERED BY THIS INVOICE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FEDERAL CHILD LABOR ACT OF SEPTEMBER 1, 1916

INVOICE 7661

YOUR ORDER 100# 1" spooled INDIAN BRAND Tissue
@ 1.25 lb.-10%

112.50

YOUR REQ.

FOB NY

82/1 99
PAID
EXCH.
INT'L
OCT 10 1928
16052

POSITIVELY NO CASH
DISCOUNT ALLOWED
AFTER OCT 10 1928

TERMS: 30 DAYS, 2% 10 DAYS END OF MONTH, EXCEPT CASES WHICH ARE NET. NO DISCOUNT ALLOWED AFTER

947

1191

BISHOP GUTTA-PERCHA COMPANY

430 EAST 25TH STREET, NEW YORK, N. Y.

SOLD TO

FERDINAND GUTMAN COMPANY,
169 - 39th Street,
Brooklyn, N.Y.

DATE **SEP 27 1928**



WE HEREBY GUARANTEE THAT THE MERCHANDISE COVERED BY THIS INVOICE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FEDERAL CHILD LABOR ACT OF SEPTEMBER 1, 1916

INVOICE 8055-1 260# 1" Spooled I.B. Tissue
for foil caps @ 1.25 Lb. -10%
YOUR ORDER **Mr. Cohen**

292.50

YOUR DEL.
FOB NY VIA OUR TRUCK

85/43
[Signature]
14
OCT 10 1928
96.52

POSITIVELY NO CASH
DISCOUNT ALLOWED
OCT 10 1928

TERMS: NET 30 DAYS, 2% 10 DAYS END OF MONTH, EXCEPT CASES WHICH ARE NET. NO DISCOUNT ALLOWED AFTER

948

1192

DEFENDANT'S EXHIBIT U U.

TELEPHONE: TRIANGLE 0464

PETERS BROS. RUBBER CO., INC.

3RD GENERATION

MANUFACTURERS-CONVERTERS

160-168 JOHN ST., BROOKLYN, N. Y.

DRY ADHESIVE BACKING CLOTHS
AND TAPESTRADE **PEBRONY** MARKWHITE SHOE CLOTH
CONVERTERS
RUBBER CLOTHS
SKINS BACKED
SATINS RUBBERIZED-COMBINED

Clerk

Deputy Clerk

SOLD TO Ferdinand Gutman & Co.,
April 10, 1929ADDRESS 39th St. & Second Ave.,
Brooklyn, N. Y.

SHIPPED VIA Truck

YOUR ORDER NO.

TERMS NET CASH 30 DAYS

2/10

ALSO
ST. LOUIS-TELEPHONE CENTRAL 34935 yds Brown Paper coated with Tissue 12/13 and
cut into 1" strips @ 12 1/2 yd.

.63

APR 17 1929

77277

ALL GOODS PROCESSED AT CUSTOMER'S RISK

BLANK

PAGE

949

1193

DEFENDANT'S EXHIBIT V V

TELEPHONE: TRIANGLE 0464

7377 PETERS BROS. RUBBER CO., INC.
 United States District Court
 Eastern District of New York
 160-168 JOHN ST., BROOKLYN, N. Y.

Exhibit V, V in evidence
 Date

Clerk

August 21, 1929.

SOLD TO

Deputy Clerk
 Ferd. Gutman Co.
 39th St. & 2nd Ave.
 New York City

ADDRESS

SHIPPED VIA Our Mr. Peters

YOUR ORDER NO.

TERMS NET CASH 30 DAYS 2/10

ALSO
ST. LOUIS-TELEPHONE CENTRAL 3493

300 yds. 25" Aluminum coated & cut to 1" @ 11¢ yd.

33.00

Crown
merchandise

6.63

PE 8/24/29
 EXTEN
 INTER
 SEP 5 1929
 11111

ALL GOODS PROCESSED AT CUSTOMER'S RISK.



DRY ADHESIVE BACKING CLOTHS
 AND TAPES

TRADE MARK **PEBRONY** MARK

WHITE SHOE CLOTH
 CONVERTERS
 RUBBER CLOTHS
 SKINS BACKED
 SATINS RUBBERIZED-COMBINED

950

1194

TELEPHONE: TRIANGLE 0484

PETERS BROS. RUBBER CO., INC.

2ND GENERATION

MANUFACTURERS-CONVERTERS

180-188 JOHN ST., BROOKLYN, N. Y.

TRADE MARK
STICTUIT
REG. U. S. PAT. OFF.

DRY ADHESIVE BACKING CLOTHS
AND TAPES

TRADE **PEBRONY** MARK

WHITE SHOE CLOTH

CONVERTERS

RUBBER CLOTHS

SKINS BACKED

SATINS RUBBERIZED-COMBINED

September 16, 1929.

SOLD TO Ferdinand Gutman Co.,
ADDRESS 39th St. & 2nd Ave.,
Brooklyn, N. Y.

SHIPPED VIA Truck

YOUR ORDER NO.

TERMS NET CASH 30 DAYS 2/10

ALSO
ST. LOUIS-TELEPHONE CENTRAL 3483

295 yds. Aluminum Coated & Gut

@ 11¢ yd.

32.25

*merchandise
Aluminum*

REC 158/1 99
PRICE \$4.00
ENTERED
SEP 25 1929
78455

IN THE EVENT OF LOSS OR DAMAGE TO GOODS, THE CARRIER IS RESPONSIBLE FOR
REPLACEMENT OF GOODS IN THE FORM AND QUANTITY TO BE DELIVERED.
All Goods Shipped At Customer's Risk.

951

1195

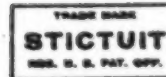
TELEPHONE: TRIANGLE 0484

PETERS BROS. RUBBER CO., INC.

2ND GENERATION

MANUFACTURERS-CONVERTERS

180-188 JOHN ST., BROOKLYN, N. Y.



DRY ADHESIVE-BACKING CLOTHS
AND TAPES

TRADE **PEBRONY** MARK

WHITE SHOE CLOTH

CONVERTING

RUBBER CLOTHS

BEING BACKED

BATING RUBBERIZED-CONCRETE

November 1, 1929.

SOLD TO Ferdinand Gutman Co.,
39th St. & 2nd Ave.,
Brooklyn, N. Y.

SHIPPED VIA TRUCK

YOUR ORDER NO.

TERMS NET CASH 30 DAYS

2/10

ALSO ST. LOUIS-TELEPHONE CENTRAL 3493

64572	1 roll --- 411 yds. 26 1/2" Aluminum @ 11 1/2 yd. Cut into 26 rolls 248 yds. each 1" wide. " " 26 " 163 yds. each 1" wide.	45.21
<p>REC'D 1/23/30</p> <p>PRICE <i>[Signature]</i></p> <p>EXTN. <i>[Signature]</i></p> <p>ENTERED <i>[Signature]</i></p> <p>PAID NOV 11 1928</p> <p>CHECK NO. 79099</p> <p><i>Gutman</i> <i>Crown</i></p> <p><small>IN THE MANUFACTURING-CONVERTING OF RUBBER ONLY TO US, WE CANNOT BE RESPONSIBLE FOR DAMAGE CAUSED BY MATERIALS IN THE RUBBER WHICH ARE SUPPLIED TO OTHERS.</small></p> <p><small>ALL GOODS FREIGHT AT CUSTOMER'S RISK.</small></p>		

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PAGE

952

1196

DEFENDANT'S EXHIBIT W W



PETERS BROS. RUBBER CO., INC.

MANUFACTURERS-CONVERTERS
160-166 JOHN ST., BROOKLYN, N. Y.

DRY ADHESIVE BACKING CLOTHS
AND TAPES
TRADE MARK **PEBRONY**
WHITE SHOE CLOTH
CONVERTERS
RUBBER CLOTHS
SKINS BACKED
SATIN RUBBERIZED-COMBINED

Unit States District Court
District of New York
Exhibit W.W. in evidence
Date

April 21, 1930.

SOLD TO F. Gutman & Co.,
39th St. & 2nd Ave.,
B'klyn., N. Y.
SHIPPED VIA Truck

YOUR ORDER NO.

TERMS NET CASH 30 DAYS

2/10

ST. LOUIS-TELEPHONE CENTRAL 3483

35592	40	yds. 38" Oil Paper coated with 'issue & Cut 1" @ .14 1/2 yd.	5.80
<p>184/3 44 <i>[Signature]</i> PRICE EXTEN INTERED 727 PAID MAY 2-1930 CHECK #. 90317</p>			
<p>IN THE RUBBERING-CONVERTING OF FABRICS SENT TO US, WE CANNOT BE RESPONSIBLE FOR DAMAGE CAUSED BY MATERIALS IN THE FABRICS WHICH ARE RETURNED TO ORDER. All Goods Packaged At Customer's Risk.</p>			

952

953

1197

9 LAYINGS, TWO 1000 GROSS

PETERS BROS. RUBBER CO., INC.

INC. CORPORATION

MANUFACTURERS-CONVERTERS

105 100 3RD ST., BROOKLYN, N. Y.



DRY ADHESIVE BACKING CLOTHS AND TAPES

TRADE **FEBRONY** MARK

WHITE SHOE CLOTH

CONVERTERS

RUBBER CLOTHS

SHIMS BACKED

BATHING RUBBERIZED-COMBINED

May 10, 1930.

SOLD TO W. J. Latham & Co.
ADDRESS 80th St. & 2nd Ave.,
 Brooklyn, N. Y.
SHIPPED VIA Truck

YOUR ORDER NO.

TERMS NET CASH 30 DAYS

2/10 ST. LOUIS-TELEPHONE CENTRAL 3493

00548	40	Yds. Oil Paper Coated & Out	• 14 1/2 yd.	5.80
<p>REC 215/3</p> <p>DATE</p> <p>ENTERED MAY 27 1930</p> <p>PAID</p> <p>CHECK</p>				

THIS RECEIPT IS VALID ONLY IF IT IS PRESENTED WITH THE ORDER TO WHICH IT IS ATTACHED. IT IS NOT VALID FOR OTHER PURPOSES. ALL GOODS FURNISHED AT CUSTOMER'S RISK.

954

1198

TELEPHONE, TRIANGLE 0484

PETERS BROS. RUBBER CO., INC.

2ND GENERATION

MANUFACTURERS-CONVERTERS

180-168 JOHN ST., BROOKLYN, N. Y.

DRY ADHESIVE LACKING CLOTHS
AND TAPESTRADE **PEBRORY** MARK

WHITE SHOE CLOTH

CONVERTERS

RUBBER CLOTHS

SKINS BACKED

SATINS RUBBERIZED-COMBINED

May 15, 1930.

SOLD TO F. Gutman & Co.,
39th St. & 2nd Ave.,
B'klyn., N. Y.

SHIPPED VIA Truck

YOUR ORDER NO.

TERMS NET CASH 30 DAYS

2/10 ST. LOUIS-TELEPHONE CENTRAL 3483

76862	75	yds. Oil Paper Coated & Cut 1" Rolls	@ 14 1/2 yd.	10.88
-------	----	--------------------------------------	--------------	-------

REC'D
DEPT
ENTERED
PAID
CHECK NO.

219/3 33
7277
MAY 26 1930
80561

"IN THE UNREMARKED-REMARKED BY PACKED SENT TO US, WE CANNOT BE RESPONSIBLE FOR
DAMAGE CAUSED BY MATERIALS IN THE PACKED WHEN ARE CLAIMED TO INSURE."
ALL GOODS PROVIDED AT CUSTOMER'S RISK.

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PAGE

955

1199

DEFENDANT'S EXHIBIT X X

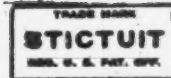
TELEPHONE: TRIANGLE 0064

6377

United States District Court
Eastern District of New York

PETERS BROS. RUBBER CO., INC.

2ND GENERATION

MANUFACTURERS-CONVERTERS
180-188 JOHN ST., BROOKLYN, N. Y.DRY ADHESIVE BACKING CLOTHS
AND TAPESTRADE **PEBRONY** MARK

WHITE SHOE CLOTH

CONVERTERS

RUBBER CLOTHS

SKINS BACKED

SATIN RUBBERIZED-COMBINED

Date May 25 1929

Clerk

(C) Deputy Clerk

May 25, 1929

SOLD TO

Ferdinand Gutman,
39th St. & 2nd Ave.,
Brooklyn, N. Y.

ADDRESS

SHIPPED VIA Truck

YOUR ORDER NO.

TERMS NET CASH 30 DAYS

2/10

ALSO

ST. LOUIS-TELEPHONE CENTRAL 3488

680	yds 17" Aluminum coated and cut to 1" @ 11 1/4 yd.	74.75	
100	" " " " " " 1" @ 11 1/4 yd.	11.50	
4	" Bond Paper coated with Formula @ 8 1/4 yd.	.52	
140	" Gutman Special Cloth coated with Formula @ 17 1/4 yd.	23.80	110.57

*The last ten inches
of cotton cloth*

Merchandise Expense .30

REC'D 32/1 22/4 99
PAID
ENTERED
JUN 6 1929
77653

ALL GOODS PROCESSED AT CUSTOMER'S RISK.

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PAGE

956

1200

DEFENDANT'S EXHIBIT Y Y

TELEPHONE: TRIANGLE 0464

PETERS BROS. RUBBER CO., INC.

MANUFACTURERS-CONVERTERS
160-166 JOHN ST., BROOKLYN, N. Y.



State District Court
Eastern District of New York
Exhibit Y.Y. in evidence
Date 1/10

Clerk
Deputy Clerk

January 15, 1930

SOLD TO Ferdinand Gutman & Co.,
39th St. & 2nd. Ave.,
Brooklyn, N. Y.

SHIPPED VIA Truck

YOUR ORDER NO.

TERMS NET CASH 30 DAYS

2/10

ALSO ST. LOUIS-Telephone Central 2488

32554	310	yds. 26" Aluminum coated and out 1" @ 114 yd. Cut into 26 rolls 200 yds. each and 26 rolls 110 yds. each. Also 3 Aluminum shells.	34.10
<p>REC'D 80/333 ICE OK ENTER SHAWLO 249 PAID JAN 27 1930 CHECK No 79694</p>			

IN THE PURCHASING-CONVINCING OF FARMED GIVE TO US, WE CANNOT BE RESPONSIBLE FOR
DAMAGE CAUSED BY MATERIALS IN THE FARMED WHICH ARE UNLISHED TO BEING.
ALL GOODS PROVIDED AT CUSTOMER'S RISK.

957

1201

TELEPHONE: TRIANGLE 0484

PETERS BROS. RUBBER CO., INC.
2ND GENERATION
MANUFACTURERS-CONVERTERS
 180-188 JOHN ST., BROOKLYN, N. Y.

TRADE MARK
STICTUIT
 REG. U. S. PAT. OFF.

DRY ADHESIVE BACKING CLOTHS
 AND TAPES

TRADE **PEBRONY** MARK

WHITE SHOE CLOTH
 CONVERTERS
 RUBBER CLOTHS
 SKINS BACKED
 SATINS RUBBERIZED-COMBINED

April 28, 1930

SOLD TO F. Gutman & Co.,
 39th St. & 2nd Ave.,
 ADDRESS B'klyn., N. Y.
 SHIPPED VIA Truck

YOUR ORDER NO.

740

TERMS NET CASH 30 DAYS

2/10

ALSO ST. LOUIS-TELEPHONE CENTRAL 3493

76332	2x480 yds. Aluminum coated with Tissue & Cut into 1" Strips	6 10 1/2 yds.
-------	--	---------------

86.10

$\frac{25}{36} \times 840 = 583 \frac{1}{3}$ yds

ENTERED

DATE

SMITH

1921/10/1
 7274
 MAY 7 - 1930
 80422

IN THE RUBBERIZING-COMBINING OF FABRICS SENT TO US, WE CANNOT BE RESPONSIBLE FOR
 DAMAGE CAUSED BY MATERIALS IN THE FABRICS WHICH ARE INJURIOUS TO RUBBER.
 ALL GOODS PROCESSED AT CUSTOMER'S RISK.

958

1202

TELEPHONE TRIANGLE 1082-1083

PETERS BROS. RUBBER CO., INC.

2ND GENERATION

MANUFACTURERS-CONVERTERS

100-108 JOHN ST., BROOKLYN, N. Y.

TRADE MARK
STICTUIT
 REG. U. S. PAT. OFF.

DRY ADHESIVE BACKING CLOTHS
 AND TAPES

TRADE MARK **PEBRONY** MARK

WHITE SHOE CLOTH

CONVERTERS

RUBBER CLOTHS

SKINS BACKED

LAYING RUBBERIZED-COMBINED

December 3, 1930

SOLD TO F. Gutman Co
 39th St & 2nd Ave
 ADDRESS B'klyn., N. Y.
 SHIPPED VIA Truck

YOUR ORDER NO.

TERMS NET CASH 30 DAYS

2/10

ALSO

ST. LOUIS-TELEPHONE CENTRAL 3493
 LYNN, MASS. - BRACKEN 4420

43274	410-400---810 yds Aluminum Coated & Gut	• 10 1/4 yd	83.C3
-------	---	-------------	-------

644
 69 1/2
 5552
 562.146

14/1/33

ENTER
 ENTERED
 CHECK

936
 DEC 15 1930
 81123

OK
 JF

"IN THE SUBSIDIARY-OWNERSHIP OF FARMING RIGHT TO USE, WE CANNOT BE RESPONSIBLE FOR
 DAMAGE CAUSED BY MATERIALS IN THE PRESENT ORDER AND SUBSEQUENT TO THEREOF."
 ALL GOODS PACKAGED AT CUSTOMER'S RISK.

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PAGE

959

DEFENDANT'S EXHIBIT Z Z

1203



PETERS BROS. RUBBER CO., INC.

2ND GENERATION

MANUFACTURERS-CONVERTERS

DRY ADHESIVE BACKING CLOTHS

HOT OR COLD PROCESS
ADHESIVE TAPES

CONVERTERS

RUBBER CLOTHS

SKINS BACKED

SATINS RUBBERIZED-COMBINED

5/13/11 150-155 JOHN ST., BROOKLYN, N. Y.
United States District Court

Eastern District of New York

Exhibit ZZ in evidence

Date Nov 1, 1932

Clerk November 1, 1932.

SOLD TO

ADDRESS

SHIPPED VIA

YOUR ORDER NO.

Ferd. Gutman & Co., Clerk
59th St. & 2nd Ave.,
Brooklyn, N. Y.

Truck

TERMS NET CASH 30 DAYS
PAYABLE IN NEW YORK FUNDS

2/10

TELEPHONE TRIANGLE 5-1009
5-1003
5-2833

MEMBER

ALSO

ST. LOUIS-TELEPHONE CENTRAL 3493
LYNN, MASS. - BRANKERS 4420
WOLLASTON, MASS. - GRANTS 2583
CINCINNATI, OHIO - MAIN 0029
MONTREAL, CAN. - MARGUETTE 3142B16848 37x110-36x115-296x100--57,810 yds 1" Varnish Paper
● 5.40 M

204.18

REC'D
25/24
PAID
EXTN.
INTL. L.
PAID
CHECK L.
NOV 12 1932
87435

OK
J.T.

"ON THE UNDERSIGNED-GUARANTEE OF PAYMENT SENT TO US, WE CANNOT BE RESPONSIBLE FOR
DAMAGE CAUSED BY MATERIALS IN THE PACKAGES WHICH ARE DANGEROUS TO RUBBER."
ALL GOODS PROCESSED AT CUSTOMER'S RISK.

960

1204

TELEPHONE: TRIANGLE 1082-1083

PETERS BROS. RUBBER CO., INC.

2ND GENERATION

MANUFACTURERS-CONVERTERS

180-188 JOHN ST., BROOKLYN, N. Y.



DRY-ADHESIVE BACKING CLOTHS
AND TAPES

TRADE **PEBRONY** MARK

WHITE SHOE CLOTH

CONVERTERS

RUBBER CLOTHS

SKINS BACKED

SATIN RUBBERIZED-COMBINED

January 6, 1931

SOLD TO Ferdinand Gutman & Co

ADDRESS 39th St & 2nd Ave
B'klyn., N. Y.

SHIPPED VIA Truck

YOUR ORDER NO.

TERMS NET CASH 30 DAYS

2/10

ALSO
ST. LOUIS-TELEPHONE CENTRAL 3483
LYNN, MASS. " BREAKERS 4420

43893	2x400	---800 yds Aluminum Coated with Tissue & 10 1/2 yd	82.00	
43893	400	yds Aluminum Coated with Tissue & Cut & 10 1/2 yd	41.00	123.00
<div style="display: flex; justify-content: space-between;"> <div> <p>1931 1200</p> <p>138 500</p> <p>134</p> <p>13 28 00</p> </div> <div> <p>PRICE</p> <p>EXTN.</p> <p>ENTERED</p> <p>PAID</p> <p>CHECK NO.</p> </div> <div> <p>1931 1200</p> <p><i>[Signature]</i></p> <p>JAN 19 1931</p> <p>12441</p> </div> <div> <p>ok</p> <p><i>[Signature]</i></p> </div> </div>				
<p>IN THE RUBBERING-CONVERTING OF PLANTS SENT TO US, WE CANNOT BE RESPONSIBLE FOR DAMAGE CAUSED BY MATERIALS IN THE PLANTS WHICH ARE SUBJECT TO RUBBER.</p> <p>ALL GOODS PROVIDED AT CUSTOMER'S RISK.</p>				

961

1205

TELEPHONE: TRIANGLE 5-1082
5-1083
5-2933

PETERS BROS. RUBBER CO., INC.
2ND GENERATION
MANUFACTURERS-CONVERTERS
150-152 JOHN ST., BROOKLYN, N. Y.



PRICE
DON'T ASK IT
MEMBER

DRY ADHESIVE BACKING CLOTHS
AND TAPES

TRADE **PEBRONY** MARK

WHITE SHOE CLOTH
CONVERTERS
RUBBER CLOTHS
SKINS BACKED
SATIN RUBBERIZED-CONVISED

SOLD TO Ferdinand Gutman & Co
ADDRESS 39th St & 2nd Avenue
SHIPPED VIA Truck Brooklyn, N. Y.

Sept. 24, 1931.

YOUR ORDER NO.

TERMS NET CASH 30 DAYS 2/10

ALSO
ST. LOUIS-TELEPHONE CENTRAL 2483
LYNN, MASS. - BRANDED 4480

52111 114 yds 19" Silver Tinfoil Coated & Cut • 10 1/2 yd 11.69

114
19
1026
114
363 1/2

REC'D
PRICE
EXTEN
ENTERED
PAID
CHECK NO.

236/1 404

OK 100

8114

84624

11.69
OK 100

"IN THE RUBBERIZING-CONVISING OF FABRICS SENT TO US, WE CANNOT BE RESPONSIBLE FOR
DAMAGE CAUSED BY MATERIALS IN THE FABRICS WHICH ARE SUITABLE TO RUBBER."
ALL GOODS PROCESSED AT CUSTOMER'S RISK.

962

1206

TELEPHONE TRIANGLE



PETERS BROS. RUBBER CO., INC.

3RD GENERATION

MANUFACTURERS-CONVERTERS

1801 1/2 ST. BROOKLYN, N. Y.

TRADE MARK
STICTUIT
REG. U. S. PAT. OFF.

MEMBER

DRY ADHESIVE BACKING CLOTH
AND TAPES

TRADE **PEBRONY** MARK

WHITE SHOE CLOTH

CONVERTERS

RUBBER CLOTHS

SKINS BACKED

BATING RUBBERIZED-COMBINED

October 13, 1931.

SOLD TO F. Guinan & Co
ADDRESS 211 1/2 St & 2nd Ave
Brooklyn, N. Y.
SHIPPED VIA 1100

YOUR ORDER NO

TERMS NET CASH 30 DAYS

E/10

ALSO
ST. LOUIS-TELEPHONE CENTRAL 3493
LYNN, MASS. - BREKERS 4420

YOUR ORDER NO	TERMS	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL	REMARKS
52440	AS	Rolls 170 yds each---5,907 yds 1" Yellow Varnish Paper Unlined	5	6.00	35.44	✓
52440	BY	Rolls 200 yds each---7,500 yds 1" Yellow Varnish Paper Unlined	7	6.00	45.51	✓ 80.95

REC'D 10/14/31
PAID
FILED
ENTERED
OCT 22 1931
CHECK NO 14763

IN THE EVENT OF A DISCREPANCY BETWEEN THE QUANTITIES SHIPPED AND THE QUANTITIES ORDERED, THE CUSTOMER SHALL BE RESPONSIBLE FOR THE SHORTAGE.
All Goods Shipped At Customer's Risk.

963

1207

DEFENDANT'S EXHIBIT A A A

T. PHONE: TRIAM 0484

PETERS BROS. RUBBER CO., INC.

AND CONVERSION

MANUFACTURERS-CONVERTERS
180-188 JOHN ST., BROOKLYN, N. Y.DRY ADHESIVE BACKING CLOTHS
AND TAPESTRADE **PEBRONY** MARKWHITE SWEE CLOTH
CONVERTERS
RUBBER CLOTHS
SKINS BACKED
SATIN RUBBERIZED-CONCRETE

United States District Court
Eastern District of New York
Exhibit *and* in evidence
Date *May 15, 1929*

SOLD TO *FD* Clerk
Deputy Clerk
Ferdinand Gutman,
29th St. & 2nd Ave.
Brooklyn, N. Y.

ADDRESS

SHIPPED VIA **Truck**

YOUR ORDER NO.

TERMS NET CASH 30 DAYS

2/10

ALSO
ST. LOUIS-TELEPHONE CENTRAL 3483

480	yds Parchment Paper coated with Tissue @ 12 1/2 yd. Cut in 1" strips.	52.50
-----	--	-------

2/1, 44
REC'D *Al. 100*
PRICE
EXTEN.
ENTERED *MAY 21 1929*
PAID
CHECK NO. *77091*

ALL GOODS PROVIDED AS CUSTOMER'S ORDER.

964

1268

TELEPHONE: TRIANGLE 0464

PETERS BROS. RUBBER CO., INC.

3RD GENERATION

MANUFACTURERS-CONVERTERS

160-168 JOHN ST., BROOKLYN, N. Y.



DRY ADHESIVE BACKING CLOTHS
AND TAPES

TRADE **PEBRONY** MARK

WHITE SHOE CLOTH

CONVERTERS

RUBBER CLOTHS

SKINS BACKED

SATIN RUBBERIZED-COMBINED

April 3, 1929

SOLD TO

Ferdinand Gotman Co.,
39th St. & Second Ave.,
Brooklyn, N. Y.

ADDRESS

SHIPPED VIA Truck

YOUR ORDER NO.

TERMS NET CASH 30 DAYS

2/10

ALSO

ST. LOUIS-TELEPHONE CENTRAL 3493

18 yds 41" Paper coated and cut to 1" @ 12 1/2 yd.

2.25

REC

7.83

APR 17 1929

ALL GOODS PROCESSED AT CUSTOMER'S RISK.

APP

[fol. 1209]

DEFENDANT'S EXHIBIT BBB

Agreement

This agreement entered into this 15th day of December, 1933, by and between Crown Cork & Seal Company, Inc., a corporation of New York, hereinafter termed first party and Peters Bros. Rubber Co., Inc., a corporation of New York, hereinafter termed second party, Witnesseth:

Whereas, first party is the owner of United States Letters Patent 1,899,782 granted February 28th, 1933, and

Whereas, second party desires to acquire the right to manufacture and sell adhesive coated paper and foil under said patent, and

Whereas, first party is willing to grant such right subject to the condition that material made under and in accordance with said patent for the center spotting of closure caps shall be sold by second party only to those licensed by first party to manufacture and sell caps including such material.

Now, Therefore, in consideration of Ten dollars (\$10.00) by second party to the first party in hand paid, receipt of which is hereby mutually acknowledged, and in consideration of the mutual agreements herein set forth as well as other good and valuable consideration, the parties hereto agree as follows:

1. First party hereby grants to second party the non-exclusive right to manufacture coated paper and/or metal foil [fol. 1210] under United States Letters Patent 1,899,782, granted February 28th, 1933, provided that when such material shall be sold for the purpose of center spotting closure caps, the same shall be sold only to persons duly licensed by first party to manufacture and sell caps containing material of the character covered by said patent and also licensed under first party's patents numbers 1,339,066, granted May 4th, 1920; 1,788,260, granted January 6th, 1931; 1,867,637, granted July 19th, 1932; 1,899,783, granted February 28th, 1933 and 1,889,784, granted February 28th, 1933.

2. Second party covenants that material made and sold under this license shall not be sold to manufacturers of crown seals and/or for center spotting of crown seals, or other closures, except and unless the purchasers of such materials are duly licensed by first party under first party's Patent No. 1,899,782, granted February 28th, 1933 and

under the first party's patents mentioned in paragraph numbered (1) supra. By "center spot," as referred to in this agreement, is meant a facing disposed substantially centrally within a cap and of less diameter than the diameter of the inner surface which contacts with the top or lip of the vessel to which the cap is applied. By "center spotting" is meant the step of applying a center spot.

3. The aforesaid license is to run for the life of the said patent 1,899,782 unless sooner terminated. The said license shall be terminable by second party upon sixty (60) days notice in writing to the first party and upon termination of the license no estoppel shall exist against second party to contest said patent in any way because of second party's [fol. 1211] having entered into this license agreement. The license shall be terminable by first party only in the event second party shall fail to live up to the provisions of this agreement.

4. First party agrees that the license granted to second party under Paragraph (1) supra, shall also include the right to manufacture and/or sell gutta percha tissue, as such, to persons duly licensed by first party to manufacture materials of the character covered by Letters Patent No. 1,899,782, and it is mutually agreed that this right shall also be subject to the same restrictions set forth in Paragraphs (1) and (2) supra.

Crown Cork & Seal Company, Inc., First Party, by
Frederick E. Fusting, Vice-President.

Attest: J. J. Nagle, Secretary. (Seal.)

CITY OF BALTIMORE,

State of Maryland, ss:

On this 27th day of December, 1933, personally appeared before the undersigned, Frederick E. Fusting, Vice-President of the Crown Cork & Seal Company, one of the parties to the foregoing agreement, and he acknowledged that he [fol. 1212] executed the same as Vice-President of said Company in accordance with authority duly given him and for the purposes set forth.

Florence M. Heckroth, Notary Public. My Commission expires May 6, 1935. (Seal.)

Peters Bros. Rubber Co., Inc., Second Party, by
George L. Peters, Pres. (Seal.)

Attest: R. M. Peters, Secretary. (Seal.)

COUNTY OF KINGS,
State of New York, ss:

On this 15th day of December, 1933, before the undersigned, a Notary Public, personally appeared George L. Peters to me known and known to me to be President of Peters Bros. Rubber Co., Inc., and he acknowledged that he executed the same as President of said Corporation in accordance with authority duly given him and for the purposes set forth.

Joseph E. Lieder, Notary Public. Queens Co. Clk's
No. 1101, Reg. No. 350. Kings Co. Clk's No. 107,
Reg. No. 4051. My Commission expires March 30,
1935. (Seal.)

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DEFENDANT'S EXHIBIT C C C

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE

To all persons to whom these presents shall come, Greeting:

THIS IS TO CERTIFY that the annexed is a true copy from the records
of this office of the File Wrapper and Contents, in the
matter of the

Letters Patent of


Albin H. Warth, Assignor to
Crown Cork & Seal Company, Inc.,

Number 1,956,481,

Granted April 24, 1934,

for

Improvement in Spot Crowns and Liner Materials Therefor.



IN TESTIMONY WHEREOF I have hereunto set my
hand and caused the seal of the Patent Office to be
affixed, at the City of Washington, this nineteenth
day of September, in the year of our Lord one
thousand nine hundred and thirty-four and of the
Independence of the United States of America the
one hundred and fifty-ninth.

ATTEST:

W. B. E. Wilson
Chief of Division

Conway P. Cor
Commissioner of Patents.

1214 969

1956481

NUMBER (Series of 1925)

676190

PATENT NO.

1933

DATED APR 24 1934

DIV.

62

(EXR'S BOOK)

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Name ALBIN H. BARTH,

Adm. to Cushman, Cook & Seal Company, Inc. of
Baltimore, Md. a City of the year

3598

BALTIMORE, Md.,
State of MARYLAND.

Invention

SPOT CROWN AND LINER MATERIAL THEREFOR

ORIGINAL

APPLICATION FILED COMPLETE JUNE 16 1933

Petition, Specification,

Oath, First Fee \$30,

1 sheet Drawings,

JUNE 16 1933

RENEWED

55
74
134
288

Division of App., No.

Examined and passed for Issue Mar 29 1934

W. W. Cochran

Ex. Div. 63

Examined and passed for Issue

Ex. Div.

Notice of Allowance MAR 29 1934

Notice of Allowance

Final Fee \$30 Mar 29 1934

Final Fee

Attorney CUSHMAN, DARBY & CUSHMAN

AMERICAN SECURITY BLDG CITY,

Associate Attorney

No. of Claims Allowed 16 Print Claims 1 in O. G. Class 2/5-39

Title as Allowed

Spot Crown Liner Material Therefor.

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PETITION

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MAIL DIVISION
JUN 16 33
U.S. PATENT OFFICE

TO THE COMMISSIONER OF PATENTS:

Your petitioner ALBIN H. WARTH, a citizen of the
United States,

residing at Baltimore,

~~in the County of~~

State of Maryland,

whose Post Office address is
c/o Crown Cork & Seal Co.,
Baltimore, Maryland

prays that Letters Patent may be granted to him for improvements in

SPOT CROWN & LINER MATERIAL THEREFOR,

as set forth in the annexed specification.

And he hereby appoints Arlon V. Cushman, John J. Darby and
William M. Cushman (constituting the firm of Cushman, Darby &
Cushman, Washington, D. C., Registration No. 7196) and each of them,
his Attorneys, with full power of substitution and revocation, to
prosecute this application, to make alterations and amendments therein,
to sign the drawings, to receive the Patent, and to transact all
business in the Patent Office connected therewith.

Albin H. Warth
(Inventor's Full Name)

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, ALBIN H. WARTH, a citizen of the
United States,

residing at Baltimore,

~~in the County of~~

State of Maryland,

have invented certain new and useful improvements in

SPOT CROWN & LINER MATERIAL THEREFOR,

and I do hereby declare the following to be a full, clear and exact
description of the invention, such as will enable others skilled
in the art to which it appertains, to make and use the same:

30.0.

The present invention relates to container closures and particularly to caps of the crown type which include a shell, a cushion liner affixed thereto, and a center spot facing of resistant material such as paper or metal foil bonded to the liner, by a stratum of liquid-resistant ^{and thermo-plastic or heat-fusible} adhesive. *for a* A closure of this type is described for example in my patent 1,899,783 granted February 28, 1933. With such a cap the spot is centered with respect to the liner disc and in use, the spot is interposed between the sealing lip of a container and the cushion liner, whereby the seal is enhanced and the contents are kept out of contact with the cushion material of the liner.

It is important (1) that the spot be maintained in this centered relationship and that the adhesive afford a secure and permanent bond to assure optimum sealing, and (2) that the adhesive stratum which is liquid-resistant be maintained continuous

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and as a completely and impervious covering to cooperate with the spot facing and afford an additional barrier means to prevent contact of the contents with the material of the cushion liner. ⁽³⁾ ₁₂

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Thus, the liner material usually of cork ^{or} composition *i.e., granulated cork and a binder* cork, rubber, rubber composition, cardboard or paper materials, ^{1. 11 and occasionally} has a tendency to shrink or contract, and may in some cases expand, while the cap is being aged in storage and during incidental handling prior to application to a container. This is particularly true with certain types of caps, for example, those containing composition cork, i.e. granulated cork and a binder, where it is desirable that the caps be stored for a period of four to six months before being shipped to the consumer, and during this curing period there occurs a partial shrinkage of the composition cork disc.

per a

Therefore, if the adhesive employed has a tendency to contract or stiffen or dry out, i.e. lose its life or granulate, the continuous adhesive stratum is cracked and physical changes, such as shrinkage in the liner will cause the bond to fracture with consequent further disruption of the adhesive stratum. If the fracture is partial, the facing is loosened and shifted out of center. In many cases, the fracture is so complete that the facing actually falls off or completely separates. Where observable such defective caps are rejected and this is not only expensive from the material standpoint, but usually the entire lot must be again inspected with consequent loss of time.

If the adhesive bond has assumed a brittle state or become weakened and fragile, and the cap is applied to the container, the compression of the cork liner incident to the capping operation which causes it to bulge downwardly in the center, fractures the adhesive and allows the facing spot to shift substantially, and separate from the liner. Hence, the seal is

imperfect and the contents are afforded opportunity to contact with the liner disc. Moreover, since the adhesive layer is liquid-resistant as described in my aforesaid patent, this slippage and partial or complete separation of the facing and liner and breaking down of the adhesive stratum, destroys the waterproof barrier between the contents and the liner formed by such layer bonding material. That is to say, the stratum of adhesive coextensive with the facing affords an additional means to prevent the contact of the contents with the material of the liner disc. Since not infrequently, the liquid contents permeate the paper or foil if the facing is defective, any shifting or separation of the facing and disruption of the continuous bonding stratum therefore renders this interposed protecting layer ineffective, in that exposed unprotected areas of the cushion material are presented to the contents.

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This same objection arises where the bond or adhesive of the cap loses its life and becomes brittle or contracts and granulates in use upon the container. Mineral waters for example, and other liquids are often bottled under high gaseous pressures of $\frac{1}{2}$ to a volume of carbon dioxide and stored for a year or more. Should the protective adhesive layer tend to brittleness and contract or granulate or the internal pressure fractures the bond to loosen the spot, exposed portions of the area of the liner will be wetted by the contents, particularly where the same have permeated the material of the facing spot.

Hence, resultant wetting of the liner disc will occur due to displacement of the spot facing and contraction and fracture of the adhesive and waterproof barrier. This wetting or saturation of the liner will cause the same to warp or expand, and as the bulge increases, the break becomes intensified and finally the spot completely separates from the liner. With the breaking down

of the adhesive protecting layer, the seal is destroyed and contact of the contents with the liner which is generally to be avoided ensues. This produces off-flavors and discoloration, reducing the value of the sealed product.

The above objections and disadvantages are those encountered with caps wherein the facing is united to the cushion liner by conventional adhesives. Such adhesives as gutta percha composition or tissue, referred to in my above mentioned patent, are satisfactory, but do not entirely solve the several problems recited. ⁽³⁶⁾ _{at}

It is an object of the present invention to provide an improved cap including a facing adherently united thereto by an adhesive having substantially all of the advantages of gutta percha as described in my aforesaid patent and which ~~is further~~ ^{overcomes the foregoing and other objections to a cap containing} improvement, ~~thereover, in that the cap of this invention reduces gutta percha as a uniting medium for the center~~ ^{the effect of the destructive forces attendant upon cap manufacture} ~~and use on containers and is less expensive than caps now being made.~~

I have discovered that in order to meet the severe conditions mentioned above, the cap must include a facing secured to the cushion liner by a layer of ^{thermo-plastic or heat-fusible} adhesive which is (1) permanently plastic; (2) non-oxidizable and non-drying; and (3) firm at normal or room temperatures. ⁽⁹⁾ _{at}

By permanently plastic, I mean that the adhesive has a longer life than conventional adhesives and is free from any tendency to dry out or granulate or assume a brittle state. That is, in a cap of the present invention, the adhesive exhibits an ability to remain plastic, as well as flexible, resilient and firm, for long periods of time under the various conditions surrounding its manufacture and use upon a container.

By non-oxidizable, I mean that the adhesive stratum is not affected by exposure to air or oxygen and oxygen compounds such as may be produced in a sealed container. This freedom from oxidation is directly traceable to the absence of any substantial amounts of oxygen reacting substances in the composition or drying oils such as tung oil or soya bean oil which tend to oxidize and thus contract or granulate to render the stratum brittle and fragile. While the absence of oils which have an extreme oxidizing tendency with a resultant brittling effect is emphasized, I do not mean to exclude the use of oils which do not have this effect. Oils may be divided into three classes, namely (a) oxidizing or drying oils, e. g. tung or linseed (raw Chinawood or raw linseed oil); (b) semi-oxidizing oils, e. g. processed rape seed oil, and (c) non-oxidizing oils, e. g. such as castor oil and fish oil. The use of the non-oxidizing oils and of small amounts combined therewith of semi-oxidizing oils with the amount being insufficient to have a marked brittling effect is not excluded.

By non-drying, I mean that the adhesive is free of substances which dry out themselves or accelerate drying and cause contraction and brittleness. Thus the absence of oxidizable and non-drying constituents favors the preservation of permanent plasticity for considerably longer periods than can be obtained with conventional bonding agents.

By firm, I mean that the adhesive, at normal room temperatures or temperatures somewhat above or below normal, is non-tacky and does not flow. It is, however, flexible and yielding or resilient, and is plastic, so that it does not fracture or crack. These qualities are important in preserving the necessary continuous liquid-resistant barrier in a cap, and insure that the bond as well as the protective adhesive will not break down where the cushion liner deforms.


In these particular respects, namely the permanently plastic, and non-oxidizable and non-drying characteristics and firmness, as just explained, of the union between the liner and facing spot, the cap of the present invention improves upon the conventional article, and in

addition, has all of the various advantages recited in my aforesaid patent.

The adhesive of the present invention is fusible at a relatively low temperature, water insoluble and acid-resisting, gas-resistant, forms a thin continuous, elastic and resilient coating or layer between the facing disc and the cushion liner.

The cap of the present invention is, therefore, ⁷an improvement over conventional caps, in that by reason of the permanent plasticity of the adhesive and its freedom from oxidization and drying and its firmness under temperature conditions usually encountered, the facing is held to the liner securely throughout its area and no opportunity is presented for objectionable slipping or separation of the facing or disintegration of the continuous barrier layer. Hence, the seal is maintained and opportunity for contact of the contents with the cushion material of the liner is reduced to a minimum.

Such conditions as shrinkage of the liner due to curing or storage, or bulging of the liner upon capping a container or upon becoming wetted do not impair the union between the facing and the liner, since the constant plastic nature of the adhesive and its incident flexibility and resilience compensate for these physical deformations without affecting the bond or the continuous protective barrier constituted by the adhesive stratum.

The cap of the present invention, furthermore, and of equal importance with the other advantageous characteristics, is capable of production at a considerable saving over the cost of producing conventional caps. This is due (1) to the use of less expensive adhesive; (2) to a shorter period of operation of affixing the spot to the cap and in producing the sheet or strip spot material, and (3) the spot material or the caps do not have to be stored or maintained or acted upon in a predetermined temperature controlled atmosphere or refrigerated, since the adhesive although heat sensitive and thermo-plastic, is, nevertheless, firm at normal or room temperatures and does not melt and flow or tend to dry when the temperatures are somewhat elevated above normal. The same advantageous condition is maintained at reduced temperatures. 

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The advantages of these factors with resultant saving in the cost of production are appreciable when it is understood that substantially 80 million gross of caps are produced yearly.

It is a further objection of present day spot crowns that when subjected to an indentation pressure near the edge, the spot lifts, i.e. the edge separates from the liner. Thus any pressure upon the spot near the edge thereof will act to loosen the same, producing an unreliable closure. Indentation pressures, of course, occur at the capping machine as well as in the hoppers of the crowning machine where the caps are subjected to agitation. Frequently also these indenting pressures are exerted during the handling of the caps. When the edge of the spot is turned up even to a slight extent, any sliding action of the flared skirt of another crown contacting with the spot will dislodge it, sometimes completely. As a result the spots are loosened or entirely separated and when the crown is applied to a container, the spot may drop into the container or often the spot having become separated the cap is applied without the spot. Either of these conditions will produce deterioration of the product being bottled and is especially true in connection with pressure beverages as well as beer. The cap having a spot united to the liner thereof by a permanently plastic varnish-like coating in accordance with the present invention, is resistant to these objectionable indenting pressures notwithstanding that the spot be repeatedly subjected to the same.

As is well understood, in the punching out of spots from ribbon or sheet material, there occurs considerable waste, possibly 40%. With the present material, and particularly in the case of metal foils such as tin or aluminum, this waste can be compacted or compressed and directly melted for producing secondary pig metal or may be melted down with other metals in the foundry for the manufacture of alloys such as Alloy 12. Stated again, the use of a foil having a plastic varnish coating increases by several hundred per cent the value of the recovery from the waste over present materials.

In connection with the avoidance of temperature controlled conditions or refrigeration, I have found that a container having a cap of the present invention applied thereto is capable of sterilization without injury to the spot facing or its adhesive bond to the liner. This is advantageous in that the cap can be used upon bottled goods which must be sterilized and the sterilization can take place with the cap on the container, thereby saving a considerable expense in operation.

Referring to the drawings:

Figure 1 represents a bottom plan view of the usual crown cap having the cushion liner and center spot applied thereto.

Figure 2 is a sectional view of the cap of Figure 1 and showing the use of a center spot of paper provided with a resistant surface coating.

Figure 3 is a sectional view of the cap of Figure 1 showing a metal foil facing.

Figure 4 is a view representative of a strip or sheet of the spot material comprising a layer of paper having a coating of varnish on its exposed surface and a layer of adhesive on its under-surface from which the spot of Figure 2 is formed by punching.

Figure 5 is a view representative of a sheet or strip of spot material comprising a layer of metal foil having a coating of adhesive on its undersurface from which the spot of Figure 3 is formed by punching.

Figure 6 is a view of a spot after the same has been punched from the strip or sheet material of Figure 4.

Figure 7 is a sectional view of the spot of Figure 6.

Figure 8 is a view of the spot punched from the foil material of Figure 5, and

Figure 9 is a sectional view of Figure 8.

Referring to the drawing, I have illustrated in Figure 1 an ordinary crown shell 10 having a top 11 and a crimped skirt 12.

^{will} Affixed to the shell in the usual manner as by a heat and/or pressure sensitive adhesive or lacquer 10¹ is a cushion disc or liner 13 of natural cork, cork composition, pasteboard, rubber or rubber composition, or any of the known materials.

A center spot 14 of less diameter than that of the cushion liner 13 is attached to the liner by means of a stratum of adhesive 15. This facing spot is of an area to engage the sealing lip of a container and prevent the contents of the container from contacting with the material of the liner 13.

While the invention is particularly concerned with center spot facings, as shown in Figure 1, it is also applicable to overall facings, that is facings which are coextensive with the area of the liner or disc.

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The center spot 14 will comprise the usual spot material such as paper 16, as shown in Figure 2, or metal foil 17, as shown in Figure 3. In the case of paper, the spots ¹⁴13 are made of express, Kraft rope or other tough qualities having a hard or high gloss finish and are preferably coated with an acid, alkali and oil and water-resistant varnish 18. In the case of the metal foil spot 17, this usually is aluminum or tin foil and its exposed surface is ordinarily not treated.

The undersurface of the spot is provided with a continuous stratum of the adhesive 15 by which the spot is united to the liner 13.

In Figure 4, I have shown a laminated strip or sheet of paper facing material comprising a continuous coextensive underlayer 15 of adhesive, an intermediate layer 16 of paper and a con-

tinuous coextensive surface layer 18 of varnish. In Figure 5, I have shown a strip or sheet of metal foil facing material, wherein the continuous and coextensive layer of adhesive is indicated at 15 and the foil at 17. It will be understood that the unitary laminated structure comprising a coextensive and continuous layer of adhesive facing material of paper and resilient varnish or foil, is fed to a suitable punching machine, as described in my aforesaid patent, from which the spots or overall facings are produced and applied to the cushion liner of the cap by heat and pressure.

Referring to Figure 6, I have shown a spot punched from the material of Figure 4 and in Figure 7, I have shown a section of the same showing the unitary character of the article. In Figure 8, I have illustrated a spot punched from the material of Figure 5 and in Figure 9 a section through the same.

The usual practice in the manufacture of caps of the type disclosed has been to employ gutta percha in tissue or composition form which is a heat-sensitive adhesive and which is rendered tacky by the action of heat at the spotting machine and while in this condition the spot is punched out and pressed into contact

with the exposed surface of the liner 13 and united thereto. *by heat and pressure*
per a *The second procedure is in accordance with the method described in my*
patent, January 6, 1931
 Gutta percha, however, presents the several objections above mentioned which impair the utility of the cap.

Gutta percha is probably the most widely recognized and used of the various adhesives and cements and is quite satisfactory. The gutta percha is in the form, however, of an oxidizable composition and frequently in storage, as well as when used upon a container, oxidation and drying take place and the adhesive bond becomes brittle or granulates, so that the adherence of the spot to the liner is seriously reduced. So much so, in fact, that where

the caps are allowed to remain in storage or are being cured and the liner expands or contracts, the relatively fragile bond is broken and disrupted and the spot is loosened, so that the cap cannot be used. This same condition occurs where the cap is used upon pressure beverages, since the bond becomes stiff or fragile and any inequalities which are produced in the liner as by capping or internal pressures or moisture act to affect the bond, so that the spot becomes loosened and the continuous stratum is disrupted whereupon the contents seep past the spot into contact with the cushion material. In some cases, this actually causes contamination of the product and where seepage exists, should a break in the bond have occurred, the bond is completely lost, since the soaking of the liner will produce a warping which the adhesive uniting the facing to the liner is incapable of compensating for.

I have found that with a cap of the center spot type wherein the center spot is united to the cushion layer, in the manner now to be described, that a permanent and continuous liquid-resistant bond is assured between the spot facing and the cushion layer and one which will not deteriorate in storage or become defective under the normal conditions of usage, i.e. is unaffected by deformation of the liner disc.

I employ as the adhesive 15 a composition having all of the advantages of gutta percha as set forth in my aforementioned patent, i.e. it is heat fusible at a relatively low temperature, water insoluble and acid-resistant, gas-resistant, elastic and resilient and forms a thin continuous coating or stratum. But additionally and, moreover, the present composition (1) is permanently plastic, (2) is non-drying and non-oxidizable and hence does not assume a brittle state, and (3) is firm, i.e. non-tacky and does not flow at normal room temperatures or somewhat elevated

temperatures or harder at reduced temperatures remaining within the limits usually encountered plastic, resilient and flexible. Gutta percha tends to soften and flow at but slightly raised temperatures and must often be refrigerated. On the other hand, the cap of this invention may be applied to a container and subjected to sterilization temperatures without injury.

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The composition which I employ, i.e. a plastic varnish coating, is prepared as a flowable mass such as a paint or lacquer and is spread or sprayed upon the sheet or strip paper or foil surface, as desired. This composition comprises a resin, preferably a synthetic resin of the polyhedric alcohol-polybasic acid (Glyptal) type, or a Rezyl resin, or a Vinylite resin (vinyl acetate), a cellulose derivative, such as nitro-cellulose, and a plasticizer, such as the aliphatic tartrates and phosphates, and a solvent preferably an organic solvent having proper drying properties. These vinylite resins are usually polymers of vinyl acetate or vinyl chloride, or mixtures of vinyl acetate and the chloride. Vinyl acetate particularly can be combined well with soluble cottons (nitro-cellulose).

The resin is not limited to the glyptal or rezyl type, but should be one capable of dissolving the cellulose derivative and have a high coefficient of plasticity.

The resin or composition may be modified by adding thereto in small percentage, non-drying vegetable oils such as castor oil to increase the plasticity. Semi-drying or drying oils are not ^{desirable} ~~desirable~~ as they undergo oxidation.

Any suitable cellulose derivative may be used and in addition to nitro-cellulose, I use cellulose acetate.

(3) ^a
I have mentioned the particular plasticizers, but it will be understood that others equally capable of acting as a solvent for the nitro-cellulose are employed. In this connection, I prefer butyl tartrate. Also trioreyslphosphate and phthallates such as dibutyl and amyl phthallates are employed. I also use methyl abietate with either ethyl or butyl alcohol. This latter is particularly useful for dissolving dammar and natural resins, as well as vinylite resins.

where rubber is desired as a constituent of the plastic varnish.¹ I find that a plastic coating of rubber containing varnish is also useful as the adhesive.

The organic solvent preferably consists of toluol, ethyl acetate, which promotes quick drying, and denatured alcohol, but, of course, other solvents capable of dissolving the mixture may be employed. Butyl acetate and butyl alcohol may also be used in the solvent mixture, as well as benzol although it is not preferred. I do not wish to be limited with respect to the solvent employed, provided, it imparts to the adhesive material proper drying properties.

A preferred composition of the above ingredients is given below.

Synthetic resin	10%
Nitro-cellulose	14%
Plasticizer	6%
Toluol	27%
Ethyl acetate	33%
Denatured alcohol	10%

The solution is applied to the paper or foil by spreading or spraying and will dry at normal temperatures in about twenty minutes.

It is to be noted that the composition is devoid of oxidizing oils which would tend to make the finish or coating brittle. However, it is possible to combine with the synthetic resin the semi-oxidizing or non-oxidizing oils to make a suitable composition, and, therefore, I do not intend to exclude the use of oils of this character either in combination with the other ingredients or as a substitute for one or more of the ingredients mentioned above.

Instead of allowing the adhesive coating to assume a firm and plastic condition without positive heating and drying, I apply the solution to the paper or foil at a temperature of about 200°F and dry the coating at substantially the same temperature. This drying is accomplished in from one to two minutes at 200°F. and effects a considerable saving in time period of operation. It is

advisable to keep drying temperature below 350° even though time of drying is short. The drying cycles will naturally vary with the degree of air change, and the tendency is to shorten time of drying. There is formed a permanently plastic coextensive coating or layer, as shown in Figures 4 and 5, whereby spots of the structure shown in Figures 6 and 8 may be readily punched therefrom. The adhesive is applied to the cushion liner by the usual spotting machine and is heat-sensitive, whereby it is rendered fusible by the heating instrumentality of the spotting machine and immediately pressed into bonded relation with the exposed surface of the cushion liner. Thereupon, the adhesive ^{assumes} ~~assumed~~ a firm and permanently plastic condition, whence it is compensatory for any physical changes which occur in the cushion liner and is neither broken nor strained, nor is its continuous, impermeable character disrupted by the expansion or contraction of the liner, so that the spot and liner are permanently connected throughout the area of their respective contact surfaces by a continuous protective barrier.

In view of this permanently plastic and firm connection between the facing and the liner disc, the caps may be manufactured and stored without fear of the spots loosening and may be applied to containers, particularly those of the pressure beverage type with assurance that the spot will not separate from the liner to either weaken the seal or permit the contents to contact with the liner material.

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1. CLAIM

A cap of the type including a shell, a cushion liner affixed to the shell, and a resistant center spot facing, said facing united to the cushion liner by a stratum of thermo-plastic waterproof and non-oxidizable adhesive firm and permanent-ly plastic at normal temperatures.

B. A cap of the type including a shell, a cushion liner affixed to the shell and a resistant center spot facing, said facing united to the cushion liner by a stratum of thermo-plastic heat sensitive waterproof and non-oxidizable adhesive firm and permanently plastic at normal temperatures.

C. A cap of the type including a shell, a cushion liner affixed to the shell, and a resistant center spot facing, said facing united to the cushion liner by a stratum of thermo-plastic non oxidizable adhesive firm and permanently plastic at normal temperatures comprising a cellulose derivative, a synthetic resin, a plasticizer, and a solvent.

D. A cap of the type including a shell, a cushion liner affixed to the shell, and a resistant center spot facing, said facing united to the cushion liner by a stratum of thermo-plastic non oxidizable adhesive firm and permanently plastic at normal temperatures comprising a cellulose derivative, a synthetic resin which is a solvent for the cellulose derivative, a plasticizer and a solvent.

E. A cap of the type including a shell, a cushion liner affixed to the shell, and a resistant center spot facing, said facing united to the cushion liner by a stratum of thermoplastic non-oxidizable adhesive firm and permanently plastic at normal temperatures comprising a cellulose derivative, a synthetic resin, a plasticizer, which is a solvent for cellulose devirative, and a solvent.

6. A cap of the type including a shell, a cushion liner affixed to the shell, and a resistant center spot facing, said facing united to the cushion liner by a stratum of thermoplastic non-oxidizable adhesive permanently plastic and firm at normal temperatures comprising nitrocellulose, a synthetic resin, a plasticizer, and a solvent.

7. A cap of the type including a shell, a cushion liner affixed to the shell, and a resistant center spot facing, said facing united to the cushion liner by a stratum of thermoplastic non-oxidizable adhesive permanently plastic and firm at normal temperatures comprising a cellulose derivative, a synthetic resin of the glyptal-type, a plasticizer, and a solvent.

8. A cap of the type including a shell, a cushion liner affixed to the shell, and a resistant center spot facing, said facing united to the cushion liner by a stratum of thermoplastic non-oxidizable adhesive permanently plastic and firm at normal temperatures comprising a cellulose derivative, a synthetic resin, a plasticizer consisting of one of a group of compounds selected from the aliphatic tartrates and phosphates, and a solvent.

9. A cap of the type including a shell, a cushion liner affixed to the shell and a resistant center spot facing, said facing united to the cushion liner by a stratum of thermoplastic non-oxidizable adhesive permanently plastic and firm at normal temperatures comprising nitrocellulose, a synthetic resin of the glyptal type, a plasticizer consisting of one of a group of compounds selected from the aliphatic tartrates and phosphates, and an organic solvent.

10.. A cap of the type including a shell, a cushion/liner affixed to the shell, and a resistant center spot facing, said facing united to the cushion liner by a stratum of thermoplastic non-oxidizable adhesive firm and permanently plastic at normal temperatures comprising a cellulose derivative, a resin, a plasticizer, and a solvent.

11. A cap of the type including a shell, a cushion liner affixed to the shell, and a resistant center spot facing, said facing united to the cushion liner by a stratum of thermoplastic non-oxidizable adhesive firm and permanently plastic at normal temperatures comprising a cellulose derivative, a resin which is a solvent for the cellulose derivative, a plasticizer and a solvent.

12. A center spot for a crown cap comprising a layer of resistant facing material and a co-extensive layer of thermoplastic waterproof non-oxidizable adhesive permanently plastic and firm at normal temperatures.

13. A center spot for a crown cap layer of resistant facing material and a co-extensive layer of thermoplastic, heat sensitive, waterproof and non-oxidizable adhesive permanently plastic and firm at normal temperatures, said adhesive comprising a synthetic resin, a cellulose derivative, a plasticizer, and a solvent.

14. A liner for caps which includes a shell, comprising a layer of suchion material and a layer of resistant facing material, said facing material united to said cushion layer by a layer co-extensive with the facing of thermoplastic, waterproof, non-oxidizable adhesive permanently plastic and firm at normal temperatures.

15. A liner for caps which includes a shell, comprising a layer of cushion material and a co-extensive layer of resistant facing material, said facing material united to said cushion layer by a layer co-extensive with the facing of thermo-plastic, water-proof, non-oxidizable adhesive permanently plastic and firm at normal temperatures, said adhesive comprising a synthetic resin, a cellulose derivative, a plasticizer, and a solvent.

Int'l A.

1234

IN TESTIMONY WHEREOF I affix my signature.

Albin H. Wirth (Inventor's Full Name)

OATH

STATE OF *Maryland*)
City)
 COUNTY OF *Baltimore*) 183.

I, ALBIN H. WIRTH,

the above-named petitioner, being duly sworn, depose and say that

I am a citizen of the United States,

and a resident of Baltimore, Maryland

and that I verily believe myself to be the original, first and sole inventor of the improvements in

SPOT CROWN & LINER MATERIAL THEREFOR,

described and claimed in the annexed specification; that I do not know and do not believe that the same was ever known or used before my invention or discovery thereof, or patented or described in any printed publication in any country before my invention or discovery thereof, or more than two years prior to this application or in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by me or my legal representatives or assigns more than twelve months prior to this application; and that no application for patent on said improvements has been filed by me or my representatives or assigns in any country foreign to the United States.

Albin H. Wirth
 (Inventor's Full Name)

Subscribed and sworn to before me this *2nd* day of *June* 193*2*
 (Notarial Seal)

Thomas H. Roberts
 (Signature of Notary Public)

Note:
 You must sign twice on
 this page - (1) above
 the oath - (2) at the
 end of the oath.

Notary Public
 (Official Character)

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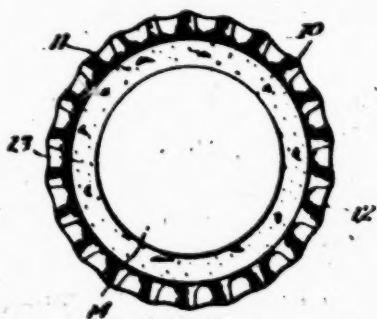
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Fig. 1.



Print of drawing as
originally filed.

Fig. 2.

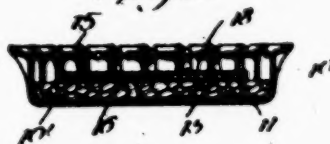


Fig. 3.

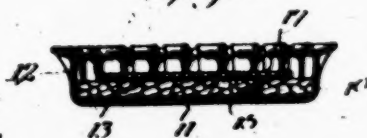


Fig. 4.

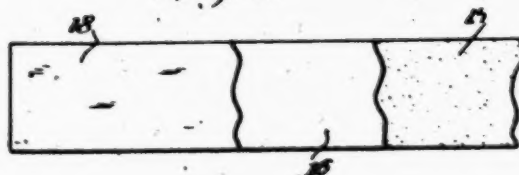
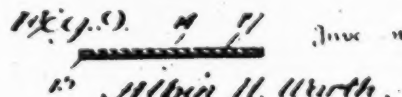
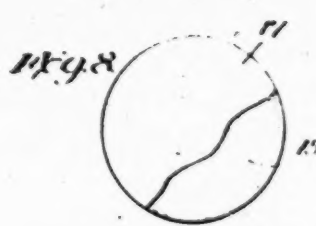
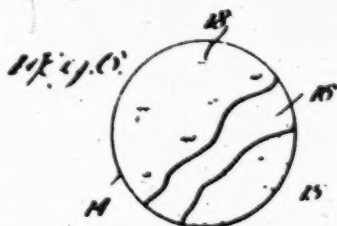


Fig. 5.



By *Ludman, Darby & Ludman*
Attorneys

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Div. 62 Room 3876

PWT:GB

Paper No. 3

Address only
The Commissioner of Patents,
Washington, D. C.,
and not any official by name

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
WASHINGTON

All communications respecting this
application should give the serial number,
date of filing, and name of
the applicant

Oct. 3, 1933.

Please find below a communication from the EXAMINER in
charge of this application.

Conway P. C.

11-2000

Commissioner of Patents.

Applicant: Albin H. Warth

Cushman, Darby & Cushman,
American Security Bldg.,
Washington, D. C.

Ser. No. 676190
Filed June 16, 1933
For Spot Crown and Liner
Material Therefor.

MAILED
OCT - 3 1933

References made of record:

Alberti	1,199,626	Sept. 19, 1916	215-39 (69)
McManus	1,339,066	May 4, 1920	215-39 (84)
McManus	1,588,250	June 8, 1926	215-39 (95)
Warth	1,899,783	Feb. 28, 1933	215-39 (113)
Warth	1,901,682	Mar. 14, 1933	215-39 (117)

Claims 1 to 11 are rejected as drawn to the old combination of cap, liner and "spot". A change of the materials of these elements or the adhesive used to secure them together is deemed to amount to no more than a matter of choice. The above cited art, moreover, clearly suggests many materials. It is deemed to be obvious that any "suitable" material may be used. If applicant believes he has invented either an adhesive or other material he should claim it per se.

Claims 12 to 15 are similarly rejected as unpatentable over the patents to Warth and to McManus. No invention is seen in using any known adhesive (or any adhesive as soon as it becomes known) to secure the "spot" of the McManus device or the Warth devices to their "cushion liner". No unobvious result arises due to the use of the specific adhesive. Applicant has chosen an adhesive with the qualities he believed best suited for the use to which it is put.

W.W. Cochran

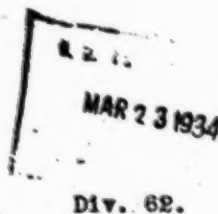
Examiner.

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IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,
SPOT CROWN & LILIER
MATERIAL THEREOF.
Filed June 16, 1933,
Serial No. 676,190.



Hon. Commissioner of Patents,
Washington, D. C.

Sir:

We hereby authorize and request entry of the following
amendments in the above entitled application.

IN THE SPECIFICATION

Page 2

Line 5, before "adhesive" insert --and thermo-plastic
or heat-fusible--.

Page 3

Line 4, after the period insert It is also desirable
that the adhesive be heat-fusible or thermo-plastic, whereby
the facing may be adhered to the cushion liner by the application
of heat and pressure; for example, in accordance with the method
described in my patent No. 1,788,260, granted January 6, 1931.

Line 5, cancel the "comma" (second occurrence) and
substitute --or--.

Line 6, before the "comma" (first occurrence) insert
--1. e., granulated cork and a binder--

Same line (6) before "rubber" insert --and occasionally--.

Same line (6) after "materials" insert a "comma".

Line 11, after "binder" insert a "comma".

Page 5

> Line 9, after the "period" insert the following:

Among the difficulties which have arisen in connection with the use of caps employing a gutta percha adhesive to unite the center spot to the cushion liner are the following:

(1) Gutta percha in the presence of moisture or high heat, to which the caps are subjected in pasteurization and sterilization processes, tends to swell and to separate the facing from the cushion liner. This is particularly noticeable upon the removal of crown caps from beer and other beverages after the caps have been applied for an extended period of time, such as several months.

a 2 /
(2) Gutta percha has a comparatively greater adhesive affinity for cork (composition or natural) than for metal foil. This is particularly evident upon the removal of caps from bottles after they have been applied for an extended period. It is observed that the center spot facing either falls off or may be readily removed from the cork disc, leaving a distinct layer of gutta percha. Very little, if any, of the gutta percha adheres to the facing. This is so objectionable that bottlers of many products, including "White Rock" water, will not use center spot caps in which the foil is adhesively united to the cork liner with gutta percha.

u 2
(3). After application to a bottle for an extended period gutta percha tends to oxidize and lose its plasticity. Consequently, variation of the shape of the cushion liner, such as occurs under temperature and moisture changes during storage of the caps, tends to cause the facing to separate or fall from the cushion liner, due to the lack of plasticity in the gutta percha stratum. Crown caps are frequently stored in the manufacturing plant for months and are stored by the purchaser for an equal period before use. Hence, the desirability of an adhesive which is permanently plastic, or substantially so.

a 2
 (4) In order to obtain a highly effective adhesion of gutta percha to metal foil, particularly in the warm weather, it is necessary to size the surface of the metal foil before applying the gutta percha. This involves a manufacturing step which it would be preferable to eliminate. The necessity for this pre-sizing becomes evident after the material has been in the cap for a considerable period. A

> Line 13, cancel "is furthermore etc." to the end of the sentence in line 17 and substitute --overcomes the foregoing and other objections to a cap containing gutta percha as a uniting medium for the center spot.--

> Line 20, before "adhesive", insert --thermo-plastic or heat-fusible--.

> Line 23, after the period insert:

a 3
 I have further discovered that these characteristics are obtainable by the use of an adhesive containing, as a base, a cellulose derivative adhesive, such as nitro-cellulose. Cellulose acetate may also be used. I have found it highly desirable to enhance the adhesive properties of the nitro-cellulose by the use of a modifying agent, and for this purpose I prefer a resin, and particularly a synthetic resin, as hereinafter set forth in detail. A suitable solvent and also a plasticizing medium may be used. A

> Page 10

Line 19, change "15" to --14--.

> Page 11

> Line 21, before the period insert --by heat and pressure--.

> Same line (21) after the period insert: --The usual procedure is in accordance with the method described in my patent No. 1,788,260, granted January 6, 1931.--

> Line 29, cancel "to".

Page 13

Line 13, after "derivative" insert a "comma".

Same line (13) after "cellulose" cancel "and" and substitute a "comma".

Same line (13) after "plasticizer" insert a "comma".

Lines 24 and 25, change "desirous" to --desirable--.

Line 27, after the period insert the following:

The resin serves to modify and enhance the adhesive properties of the nitro-cellulose, and hence is a desirable modifying agent.

Page 15

Line 11, change "assumed" to --assumes--.

Last line, after the period insert the following:

I have discovered that by employing an adhesive of the character set forth, it is unnecessary to pre-size or treat the surface of the metal foil before applying the adhesive. Moreover, the adhesive stratum does not tend to swell when subjected to moisture and does not lose its adhesive properties throughout pasteurizing temperatures which may run as high as 185°F. Further, I have discovered that a stratum of this character has an adhesive affinity for metal foil, particularly, and also for other facings to substantially the same extent as for cork. This affinity becomes evident after extended use of a cap of this character. It is observed that there is virtually no tendency for the metal foil center to fall from or to readily separate from the cushion layer. Upon forced separation of the facing and cushion layer, a very large portion of the adhesive stratum adheres to the center spot facing and substantially to the same extent as to the cork.

Moreover, I have discovered a very unusual property, namely, that the mechanical pressure to which the facing and adhesive are subjected while the cap is positioned on the bottle improves or enhances the adherence of the center spot facing to the cork disc. In other words, actual tests have shown that, although center spot,

caps containing a gutta percha stratum deteriorate from the date of manufacture, particularly after being applied to a bottle, so far as adhesion of the center spot to the cushion disc are concerned, the caps of my application actually improve and when examined after a period of use the spots are more firmly united to the cushion disc than when the caps are first manufactured. This continued improvement in the adhesion has been observed throughout periods of over a year and is a vital characteristic of this invention. *W. A. G. G. G.*

IN THE CLAIMS

Cancel the claims and substitute:

Handwritten: ~~1. 16.~~ *cancel*

1. 16. In a cap which includes a metal shell, a cushion liner, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a cellulose derivative adhesive.

2. 17. In a cap which includes a metal shell, a cushion liner, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a cellulose derivative adhesive and a modifying agent enhancing the adhesive characteristics of said derivative.

3. 18. In a cap which includes a metal shell, a cushion liner, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a nitro-cellulose adhesive base.

129. In a cap which includes a metal shell, a cushion liner, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a nitro-cellulose adhesive base and a modifying agent enhancing the adhesive properties of the nitro-cellulose.

130. In a cap which includes a metal shell, a cushion liner of cork, a center facing of metal foil of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a cellulose derivative adhesive.

131. In a cap which includes a metal shell, a cushion liner of cork, a center facing of metal foil of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a cellulose derivative adhesive and a modifying agent enhancing the adhesive characteristics of said derivative.

132. In a cap which includes a metal shell, a cushion liner of cork, a center facing of metal foil of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a nitro-cellulose adhesive base.

8.23. In a cap which includes a metal shell, a cushion liner of cork, a center facing of metal foil of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a nitro-cellulose adhesive base and a modifying agent enhancing the adhesive properties of the nitro-cellulose.

9.24. In a cap which includes a metal shell, a cushion liner, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and cushion liner and uniting the two, said stratum comprising a cellulose derivative adhesive and a resin.

10.25. In a cap which includes a metal shell, a cushion liner of cork, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and cork cushion and uniting the two, said stratum comprising a cellulose derivative adhesive and a resin.

11.26. In a cap which includes a metal shell, a cushion liner, a center facing of metal foil, and a stratum of heat-fusible adhesive interposed between the facing and cushion liner and uniting the two, said stratum comprising a cellulose derivative adhesive and a resin.

12.27. In a cap which includes a metal shell, a cushion liner of cork, a center facing of metal foil, and a stratum of heat-fusible adhesive interposed between the facing and cork cushion and uniting the two, said stratum comprising a cellulose derivative adhesive and a resin.

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13 28. In a cap which includes a metal shell, a cushion liner, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and cushion liner and uniting the two, said stratum comprising a nitro-cellulose adhesive and a resin.

14 29. In a cap which includes a metal shell, a cushion liner of cork, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and cork cushion and uniting the two, said stratum comprising a nitro-cellulose adhesive and a resin.

15 30. In a cap which includes a metal shell, a cushion liner, a center facing of metal foil, and a stratum of heat-fusible adhesive interposed between the facing and cushion liner and uniting the two, said stratum comprising a nitro-cellulose adhesive and a resin.

16 31. In a cap which includes a metal shell, a cushion liner of cork, a center facing of metal foil, and a stratum of heat-fusible adhesive interposed between the facing and cork cushion and uniting the two, said stratum comprising a nitro-cellulose adhesive and a resin.

REMARKS

This application has been amended in the light of an interview kindly granted the applicant and his attorneys by the Primary Examiner.

The claims have been redrafted to modify their form. But the new claims are directed to the same subject matter, and are of substantially the same scope as the claims formerly of record.

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We submit herewith affidavits setting forth the technical results obtained by this invention, and it is believed that these affidavits clearly establish that the applicant has made a most valuable contribution to the art and has solved a problem which has confronted inventors in this art for many years.

Although nitro-cellulose adhesives are broadly old, the fact remains that no one, prior to the applicant, has discovered that they possess the properties necessary to overcome the objections to center spot caps which have been used for many years. The Examiner is, of course, aware of the difficulties which the beverage industry has experienced in connection with the use of the conventional center spot crown employing gutta percha as an adhesive for uniting the metal foil center spot to the cork disc or liner. These difficulties presented a problem which the entire cap industry has been striving in vain to work out. The applicant himself has been working with this problem for many years. Although he had available the experience of the Crown Cork & Seal Company, Inc., which is the largest manufacturer of closures in the world, it was only after many years of work that he succeeded. The solution may seem simple, since it involves primarily the use of a broadly old material. But the history of the art and the efforts of numerous inventors, including the applicant, to solve the problem, are certainly persuasive that there is invention involved.

The Courts have repeatedly held that novelty of selection is a sign of patentable invention. Applicant was the first to discover the great value of adhesives of the type described for uniting center spot facings to cushion discs, and particularly center spots of the metal foil type to cork discs. That the material used in accomplishing this result may have been broadly old, does not negative invention.

A question of this precise character was considered by the Circuit Court of Appeals of the Second Circuit in International Cork Co. vs. New Process Cork Co., 6 Fed. (2d) 420. In that case, the Court had before it the Alberti patent No. 2,234,711, which covered the use of a heat coagulated adhesive for retaining the cushion disc in a crown cap. Prior to the Alberti invention, it had been customary to use resin and waxes. But nobody had every used albumen or heat coagulative adhesive for this purpose. The Court in sustaining the selection of this broadly old adhesive for use in the crown cap industry as involving invention said (at 423):

"The great volume of work and experimentation that was indulged in by men who were interested in this art, all laboring to meet this necessity, indicates the importance of the new idea which has resulted in the patents in suit. To the art it seems a forward step, and has succeeded in bringing about economy in manufacture, speed in production, and a cheaper product -- cheaper because of the ability to manufacture faster. The outstanding fact is that in all this experimentation of trained men, with some knowledge of egg or blood albumen, no one thought of its use as Alberti made use of it in the patents in suit. It is more than a mere substitution for a new use. Such a substitution, if it was one, was not evident to these experienced men."

We submit that it would be difficult to find a clearer authority for the allowance of the claims presented in this application than the decision of the Court in the case above cited. But in that case, the Court did not define new law. It was following clearly established precedent. For example, in George Frost Co. v. Cohn, 119 Fed. 505, 507, the Court of Appeals of the Second Circuit in sustaining a patent for a rubber button for a hose supporter said:

"The instances of the prior use of such a material (rubber) do not necessarily suggest its adaptability to do the work required of a button in a hose or garment supporter more efficiently than one of metal. That its selection was not an obvious thing is persuasively and cogently

shown by the fact that during many years numerous inventors were trying to remedy the defects in the old device, and it did not occur to them how simply and satisfactorily this could be done by making the button of rubber or some other elastic or yielding material. Its employment in the device of the patent was a new use, and imparted to the device a remarkable efficiency, as compared with that of the best type of former devices."

In Hartford v. Moore, 181 Fed. (C. C. S. D., N. Y.) 132,

134, the Court said:

"It certainly cannot be necessary to repeat the well-known principle that it is no indication of non-invention that the device should seem obvious after it has been discovered. Many great inventions are of this character, and the reason why the ordinary man does not discover them although they are so plain when some one else has done so is that habit has limited his power to see what he has not been accustomed to see, and his selective attention is fast bound by his past experience."

* * *

"Therefore a plausible argument may be made that the patent in suit is nothing but a new use for this old instrument without modification except that of size, which, of course, would be readily suggestible to any trained person. Yet, in spite of this similarity, I do not consider that it is a valid anticipation, because some one must have selected it for the purpose, and, as I have already said, novelty of selection is oftentimes a sure sign of patentable invention. The device in question was used to modify the action of a door spring. The question is whether the usual person with all the art before him would have thought of applying such a device in modifying the action of a spring on a vehicle. Here again when once the suggestion is made it is simple and obvious, but the problem before a person seeking to modify the action of a spring upon a vehicle is one which of itself does not suggest the problem of modifying the problem of the spring door."

In connection with the statement in this last case that "novelty of selection is oftentimes a sure sign of patentable invention", the decisions in Parrell v. Fitchburg Duck Mills, 207 Fed. 371 (C. C. D. Mass.), affirmed 214 Fed. 777, are of special interest here. For there the patentee, like Warth, had selected an old material for a new use and to perform new functions. And his patent was sustained. The opinions of both the

District Court and the Court of Appeals will be found to be of interest in their entirety.

There is no question that the Warth discovery has, as a practical matter, proved a most valuable contribution to the art. It makes no difference that its accomplishment now seems easy. For, as stated by the Court of Appeals of the Second Circuit in H. D. Smith & Co. v. Peck, Stow & Wilcox Co., 262 Fed. 415, 417:

"Whether the structure involves invention is a question of fact, and the determining factor is not whether the achievement is difficult or easy, but whether it has, in point of fact, given the world something of real value, that it did not have - - a benefit conferred upon mankind."

Similarly the Supreme Court said in Eibel Process Co. v. Minnesota and Ontario Paper Co., 261 U. S. 45;

"In administering the patent law, the court first looks into the art, to find what the real merit of the alleged discovery or invention is, and whether it has advanced the art substantially. If it has done so, then the court is liberal in its construction of the patent, to secure to the inventor the reward he deserves."

We think that, upon considering the affidavits filed, the Examiner will now concede that the results obtained by the applicant in employing an adhesive of the type defined are far from obvious. He has discovered latent and heretofore unrecognized qualities in such an adhesive, and the fact that this discovery is the result of years of effort, rather than a sudden thought, in no way detracts from the merit of the invention.

We have not overlooked the Examiner's suggestion that the claims should not be directed to the several parts of the cap, and further that if applicant has invented an adhesive he should claim the same as such. We submit that applicant's invention is not the adhesive, but a closure having the parts recited in

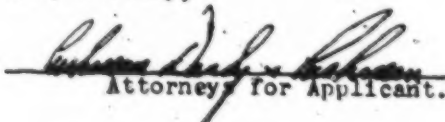
the claims. The exact objection raised by the Examiner was considered by the Court in International Cork Co. v. New Process Cork Co., supra. The defendants clearly established that the use of an albumen adhesive was broadly old, although perhaps not in the cap industry. The Court held further, however, that the claims defining the cap, as a whole, were valid and properly defined the invention. For example, claims 1 and 2 of the patent in suit read:

"1. A closure for receptacles comprising a metallic cap, a sealing disk, and an interposed heat-coagulating cementing medium.

2. A closure for receptacles comprising a metallic cap, a sealing disk, and an interposed cementing medium coagulated and rendered insoluble by heat."

It is submitted that this decision is ample authority for the allowance of claims of the type here presented.

Respectfully,


Attorney for Applicant.

JJD:U

1250



IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

SPOT CROWN & LINER
MATERIAL THEREFOR,

Filed June 16, 1933,

Serial No. 676,190.

Div. 62.

* * *

CITY OF BALTIMORE)
: ss.
STATE OF MARYLAND)

ALBIN H. WARTH, whose application for Letters Patent for Improvements in Spot Crown & Liner Material Therefor, was filed June 16, 1933, Serial No. 676,190, being duly sworn, deposes and says that he has read the attached amendment and that the subject matter thereof was part of his invention, was invented before he filed his original application, above identified, for such invention, and that deponent does not know and does not believe that the same was known or used before his invention, or patented or described in a printed publication in any country more than two years before his application, or patented in a foreign country on an application filed by him or his legal representatives or assigns more than twelve months before his application, or in public use or on sale in this country for more than two years before the date of his application, and that the same has not been abandoned.

Albin H. Warth

Subscribed and sworn to before me, a Notary Public, this
22nd day of March, 1934.

Flora M. [Signature]
Notary Public.

MY COMMISSION EXPIRES MAY 6, 1935

SEAL.

1005



IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

SPOT CROWN & LINER
MATERIAL THEREFOR,

Filed June 16, 1933,

Serial No. 676,190.

Div. 62.

* * *

AFFIDAVIT OF ALBIN H. WARTH

CITY OF BALTIMORE)

:33.

STATE OF MARYLAND)

ALBIN H. WARTH, being first duly sworn, deposes and says:

I am the applicant identified in the above entitled application.

For approximately seventeen (17) years I have been employed by the Crown Cork & Seal Company, Inc., and its predecessor, The Crown Cork & Seal Company of Baltimore City, and for the same period of time have been continuously engaged in technical work connected with the manufacture and development of caps, particularly caps of the "crown" type.

The invention of my application above identified relates primarily to the "crown" type of cap, and more particularly to that species of crowns known as "center spot" crowns, wherein a facing of less diameter than the cushion disc is adhesively united to the cushion disc or liner disposed within the metal shell.

I am the patentee identified in the following patents, all of which relate to caps of the center spot type:

1,788,260,	Warth	Jan.	6, 1931
1,899,783,	Warth	Feb.	28, 1933
1,899,784,	Warth	Feb.	28, 1933
1,867,637,	Warth	July	19, 1932.

For many years, the Crown Cork & Seal Company, Inc., and its predecessor have manufactured center spot caps in which the facing, whether of varnished paper or metal foil (aluminum and tin), has been united to the cushion liner by a stratum of gutta percha. These caps have been used for the bottling of beer and carbonated beverages, and well over fifty million gross have been manufactured and used commercially throughout the United States and foreign countries.

For some years, I have been engaged in the laboratory of the Crown Cork & Seal Company, Inc., of which I am in charge, with the problem of overcoming certain difficulties which have arisen in connection with the manufacture and use of caps employing gutta percha or a gutta percha compound to unite the center spot facing to the liner. These difficulties are pointed out generally in the specification of my above entitled application and may be briefly summarized as follows:

(1). Gutta percha in the presence of moisture or high heat, to which the caps are subjected in pasteurization and sterilization processes, tends to swell and to separate the facing from the cushion liner. This is particularly noticeable upon the removal of crown caps from beer and other beverages after the caps have been applied for an extended period of time, such as several months.

(2). Gutta percha has a comparatively greater adhesive affinity for cork (composition or natural) than for metal foil. This is particularly evident upon the removal of caps from bottles after they have been applied for an extended period. It is observed that the center spot facing either falls off or may be readily removed from the cork disc, leaving a distinct layer of gutta percha. Very little, if any, of the gutta percha adheres to the facing. This is so objectionable that bottlers of many pro-

ducts, including "White Rock" water, will not use center spot caps in which the foil is adhesively united to the cork liner with gutta percha.

(3). After application to a bottle for an extended period gutta percha tends to oxidize and lose its plasticity. Consequently, under variation of the shape of the cushion liner following loss of plasticity, such as occurs under temperature and moisture changes during storage of the caps, the facing tends to separate or fall from the cushion liner. Crown caps are frequently stored in the manufacturing plant for months and are stored by the purchaser for an equal period before use. Hence, the desirability of an adhesive which is permanently plastic, or substantially so.

(4). In order to obtain a highly effective adhesion of gutta percha to metal foil, particularly in the warm weather, it is necessary to size the surface of the metal foil before applying the gutta percha. This involves a manufacturing step which it would be preferable to eliminate. The necessity for this pre-sizing becomes evident after the material has been in the cap for a considerable period.

In my above entitled application, I have disclosed a development which has overcome the foregoing objections to center spot caps having the facing united to the cushion liner by gutta percha. I have discovered that by the use of an adhesive having a cellulose derivative base, e. g., nitro-cellulose, and particularly when the adhesive properties of the cellulose derivative are enhanced by a modifying agent, such as a resin, there is provided a product having the characteristics generally set forth in the specification of my application.

First, the adhesive layer stratum is permanently plastic or substantially so. Consequently, it adapts itself to any changes

in the shape or physical characteristics of the cork layer to which the adhesive unites the facing, and does so without losing its adhesion to either the cork or the facing.

Second, I have discovered that a stratum of this character has an adhesive affinity for metal foil and other facings to substantially the same extent as for cork. This is evident from extended use in center spot crowns, wherein it has been observed that there is virtually no tendency for the metal foil center spot to fall from or to be readily separable from the cushion layer. Upon separation of the facing and cushion layer, a very large portion of the adhesive stratum adheres to the center spot facing and substantially to the same extent as to the cork.

Third, it is unnecessary to pre-size or treat the surface of the metal foil, whether aluminum or tin, before applying the thermo-plastic or heat-fusible adhesive of this application.

Fourth, the new cap includes an adhesive stratum which does not vary in characteristics when subjected to moisture; it is non-swelling and does not lose its adhesive properties throughout pasteurizing temperatures, which may run as high as 185° F.

Fifth, I have discovered a very unusual property, namely, that the mechanical pressure to which the facing and adhesive are subjected while the cap is positioned on the bottle improves or enhances the adherence of the center spot facing to the cork disc. In other words, actual tests have shown that, although center spot caps containing a gutta percha stratum deteriorate from the date of manufacture, particularly after being applied to a bottle, so far as adhesion of the center spot to the cushion disc are concerned, the caps of my application actually improve and when examined after a period of use the spots are more firmly united to the cushion disc than when the caps are first manufactured. This continued improvement in the adhesion has been observed through-

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out periods of over a year and is a vital characteristic of this invention.

The foregoing statements are based upon extended tests of caps made in accordance with the disclosure of my above identified application, and the results of these tests have had the attention of others in the employ of the Crown Cork & Seal Company, Inc., including my laboratory assistant, Miss Miriam Stover.

Further deponent sayeth not.

Alvin H. Waite

Subscribed and sworn to before me, a Notary Public, this
2nd day of March, 1934.

Horace W. DeKroetz
Notary Public.

MY COMMISSION EXPIRES MAY 6, 1935

SEAL.

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Albin H. Warth,
SPOT CROWN & LINER
MATERIAL THEREFOR.

Filed June 16, 1933,

Serial No. 676,190

Div. 62.



THE UNITED STATES PATENT OFFICE

* * *

AFFIDAVIT OF MIRIAM STOVER

CITY OF BALTIMORE)
:ss.
STATE OF MARYLAND)

MIRIAM STOVER, being first duly sworn, deposes and says:

I am of legal age, and have been employed by the Crown Cork & Seal Company, Inc., and its predecessor, The Crown Cork & Seal Company of Baltimore City for over ten years.

Since May 1920 I have been an assistant in the laboratory of the Crown Cork & Seal Company, under Albin H. Warth.

I have read the above entitled application for patent, and am familiar with its disclosure. For some years, I have closely followed experiments conducted by the said Albin H. Warth in connection with the invention described in said application.

I have read the affidavit of Albin H. Warth, which is attached hereto and is dated the 22nd day of March, 1934. I know the statements therein contained are true from my own observation. I personally conducted many of the experiments referred to in said affidavit, and have examined and tested after extended periods of use caps made in accordance with the disclosure of said application for patent.

Further deponent sayeth not.

Miriam Stover

Subscribed and sworn to before me, a Notary Public, this
22 day of March, 1934.

Francis W. DeLoach
Notary Public.

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Div. 62 - CB.

ADDRESS ONLY
THE COMMISSIONER OF PATENTS
WASHINGTON, D. C.

Serial No. 676190

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE

WASHINGTON March twenty-nine, 1934.

Albin H. Warth, Assor.

Your APPLICATION for a patent for an IMPROVEMENT in
SPOT CROWN AND LINER MATERIAL THEREFOR

filed June 16, 1933 has been examined and ALLOWED with 16 claims.

The final fee, THIRTY DOLLARS, WITH \$1 ADDITIONAL FOR
EACH CLAIM ALLOWED IN EXCESS OF 20, must be paid not later than
SIX MONTHS from the date of this present notice of allowance.If the final fee be not paid within that period, the patent
will be withheld, but the application may be renewed within one
year after the date of the original notice with a renewal fee
of \$30 and \$1 additional for each claim in excess of 20.The office delivers patents upon the day of their date,
on which date their term begins to run. The preparation of the
patent for final signing and sealing will require about four
weeks, and such work will not be begun until after payment of
the necessary final fee.When the final fee is paid, there should also be sent,
DISTINCTLY AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE
OF THE INVENTION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF
ALLOWANCE (which is the date of this circular), DATE OF FILING,
and, if assigned, the NAMES OF THE ASSIGNEES.If it is desired to have the patent issue to an ASSIGNEE
OR ASSIGNEES, an assignment containing a REQUEST to that effect,
together with the FEE for recording the same, must be filed in
this office on or before the date of payment of the final fee.After issue of the patent, uncertified copies of the
drawings and specifications may be purchased at the price of
TEN CENTS EACH. The money should accompany the order. Postage
stamps will not be received.The final fee will NOT be received from other than the
applicant, his assignee or attorney, or a party in interest as
shown by the records of the Patent Office.NOTICE.—WHEN THE NUMBER OF CLAIMS ALLOWED IS IN EXCESS OF 20,
NO SUM LESS THAN \$30 PLUS \$1 ADDITIONAL FOR EACH
CLAIM IN EXCESS OF TWENTY CAN BE ACCEPTED AS THE
FINAL FEE.

Respectfully,

Commissioner of Patents.

Cushman, Darby & Cushman,
American Security Bldg.,
Washington, D. C.

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

UNCERTIFIED CHECKS WILL NOT BE ACCEPTED.

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MAR 29 34
PATENT OFFICE

FINAL FEE PAID TO THE COMMISSIONER OF PATENTS

(Be careful to give correct Serial No.)

Serial No. 676,190

INVENTOR

Albin H. Warth

PAYMENT TO BE MADE TO

As per record

NAME OF INVENTION, AS ALLOWED:

Spot Grown & Lined Material Therefor

DATE OF PAYMENT:

March 29, 1934

FRS:

Final

DATE OF FILING:

June 15, 1933

DATE OF CIRCULAR OF ACTION:

Please issue April 24, 1934

The Commissioner of Patents will please apply the accompanying fee as indicated above.

Cushman, Derby & Cushman

Attorneys

SEND PAYMENT TO

Attorneys

Final fees will not be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office, NOR WILL THEY BE APPLIED IN PENDING APPLICATIONS.

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PAGE

April 24, 1934.

A. H. WARTH

1,956,481

SPOT CROWN AND LINER MATERIAL THEREFOR

Filed June 16, 1933

Fig. 1.

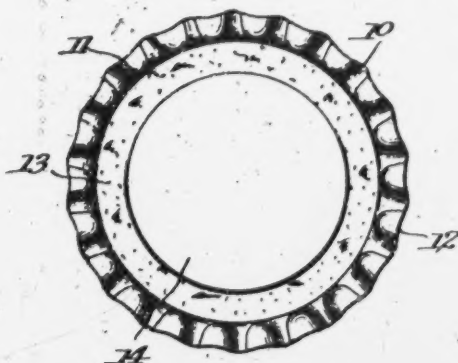


Fig. 2.



Fig. 3.



Fig. 4.

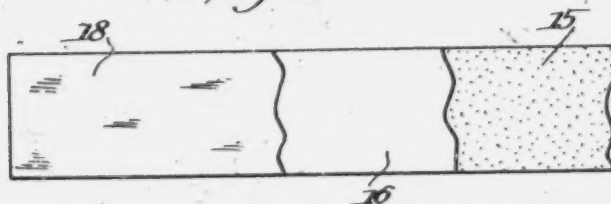


Fig. 5.



Fig. 6.

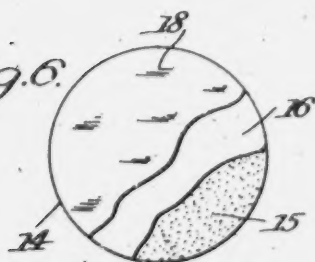


Fig. 8.

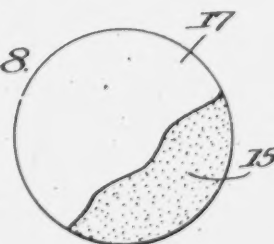
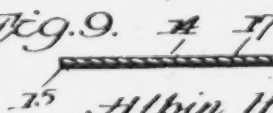


Fig. 7.



Fig. 9.



Inventor

Albin H. Warth.

By *Lincoln W. Darby & Lincoln*
Attorneys

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UNITED STATES PATENT OFFICE

1,956,481

SPOT CROWN AND LINER MATERIAL
THEREFORAlbin H. Warth, Baltimore, Md., assignor to
Crown Cork & Seal Company, Inc., Baltimore,
Md., a corporation of New York

Application June 16, 1933, Serial No. 676,190

16 Claims. (Cl. 215—39)

The present invention relates to container closures and particularly to caps of the crown type which include a shell, a cushion liner affixed thereto, and a center spot facing of resistant material such as paper or metal foil bonded to the liner, by a stratum of liquid-resistant and thermo-plastic or heat-fusible adhesive. A closure of this type is described for example in my Patent 1,899,783 granted February 28, 1933. With such a cap the spot is centered with respect to the liner disc and in use, the spot is interposed between the sealing lip of a container and the cushion liner, whereby the seal is enhanced and the contents are kept out of contact with the cushion material of the liner.

It is important (1) that the spot be maintained in this centered relationship and that the adhesive afford a secure and permanent bond to assure optimum sealing, and (2) that the adhesive stratum which is liquid-resistant be maintained continuous and as a completely and impervious covering to cooperate with the spot facing and afford an additional barrier means to prevent contact of the contents with the material of the cushion liner. It is also desirable that the adhesive be heat-fusible or thermo-plastic, whereby the facing may be adhered to the cushion liner by the application of heat and pressure; for example, in accordance with the method described in my Patent No. 1,785,260, granted January 6, 1931.

Thus, the liner material usually of cork or composition cork, i. e., granulated cork and a binder, and occasionally rubber, rubber composition, cardboard or paper materials, has a tendency to shrink or contract, and may in some cases expand, while the cap is being aged in storage and during incidental handling prior to application to a container. This is particularly true with certain types of caps, for example, those containing composition cork, i. e., granulated cork and a binder, where it is desirable that the caps be stored for a period of four to six months before being shipped to the consumer, and during this curing period there occurs a partial shrinkage of the composition cork disc.

Therefore, if the adhesive employed has a tendency to contract or stiffen or dry out, i. e. lose its life or granulate, the continuous adhesive stratum is cracked and physical changes, such as shrinkage in the liner will cause the bond to fracture with consequent further disruption of the adhesive stratum. If the fracture is partial, the facing is loosened and shifted out of center. In many cases, the fracture is so complete that

the facing actually falls off or completely separates. Where observable such defective caps are rejected and this is not only expensive from the material standpoint, but usually the entire lot must be again inspected with consequent loss of time.

If the adhesive bond has assumed a brittle state or become weakened and fragile, and the cap is applied to the container, the compression of the cork liner incident to the capping operation which causes it to bulge downwardly in the center, fractures the adhesive and allows the facing spot to shift substantially, and separate from the liner. Hence, the seal is imperfect and the contents are afforded opportunity to contact with the liner disc. Moreover, since the adhesive layer is liquid-resistant as described in my aforesaid patent, this slippage and partial or complete separation of the facing and liner and breaking down of the adhesive stratum, destroys the watertight barrier between the contents and the liner formed by such layer bonding material. That is to say, the stratum of adhesive coextensive with the facing affords an additional means to prevent the contact of the contents with the material of the liner disc. Since not infrequently, the liquid contents permeate the paper or foil if the facing is defective, any shifting or separation of the facing and disruption of the continuous bonding stratum therefore renders this interposed protecting layer ineffective, in that exposed unprotected areas of the cushion material are presented to the contents.

This same objection arises where the bond or adhesive of the cap loses its life and becomes brittle or contracts and granulates in use upon the container. Mineral waters for example, and other liquids are often bottled under high gaseous pressures of $4\frac{1}{2}$ to 6 volumes of carbon dioxide and stored for a year or more. Should the protective adhesive layer tend to brittleness and contract or granulate or the internal pressure fractures the bond to loosen the spot, exposed portions of the area of the liner will be wetted by the contents, particularly where the same have permeated the material of the facing spot.

Hence, resultant wetting of the liner disc will occur due to displacement of the spot facing and contraction and fracture of the adhesive and waterproof barrier. This wetting or saturation of the liner will cause the same to warp or expand, and as the bulge increases, the break becomes intensified and finally the spot completely separates from the liner. With the breaking down of the adhesive protecting layer, the seal

is destroyed and contact of the contents with the liner which is generally to be avoided ensues. This produces off-flavors and discoloration, reducing the value of the sealed product.

5 The above objections and disadvantages are those encountered with caps wherein the facing is united to the cushion liner by conventional adhesives. Such adhesives as gutta percha composition or tissue, referred to in my above mentioned patent, are satisfactory, but do not entirely solve the several problems recited. Among the difficulties which have arisen in connection with the use of caps employing a gutta percha adhesive to unite the center spot to the cushion liner are the following:

15 (1) Gutta percha in the presence of moisture or high heat, to which the caps are subjected in pasteurization and sterilization processes, tends to swell and to separate the facing from the cushion liner. This is particularly noticeable upon the removal of crown caps from beer and other beverages after the caps have been applied for an extended period of time, such as several months.

25 (2) Gutta percha has a comparatively greater adhesive affinity for cork (composition or natural) than for metal foil. This is particularly evident upon the removal of caps from bottles after they have been applied for an extended period. It is observed that the center spot facing either falls off or may be readily removed from the cork disc, leaving a distinct layer of gutta percha. Very little, if any, of the gutta percha adheres to the facing. This is so objectionable that bottlers of many products, including "White Rock" water, will not use center spot caps in which the foil is adhesively united to the cork liner with gutta percha.

35 (3) After application to a bottle for an extended period gutta percha tends to oxidize and lose its plasticity. Consequently, variation of the shape of the cushion liner, such as occurs under temperature and moisture changes during storage of the caps, tends to cause the facing to separate or fall from the cushion liner, due to the lack of plasticity in the gutta percha stratum. Crown caps are frequently stored in the manufacturing plant for months and are stored by the purchaser for an equal period before use. Hence, the desirability of an adhesive which is permanently plastic, or substantially so.

50 (4) In order to obtain a highly effective adhesion of gutta percha to metal foil, particularly in the warm weather, it is necessary to size the surface of the metal foil before applying the gutta percha. This involves a manufacturing step which it would be preferable to eliminate. The necessity for this pre-sizing becomes evident after the material has been in the cap for a considerable period.

60 It is an object of the present invention to provide an improved cap including a facing adherently united thereto by an adhesive having substantially all of the advantages of gutta percha as described in my aforesaid patent and which overcomes the foregoing and other objections to a cap containing gutta percha as a uniting medium for the center spot.

70 I have discovered that in order to meet the severe conditions mentioned above, the cap must include a facing secured to the cushion liner by a layer of thermo-plastic or heat-fusible adhesive which is (1) permanently plastic; (2) non-oxidizable and non-drying and (3) firm at normal or room temperatures. I have further dis-

covered that these characteristics are obtainable by the use of an adhesive containing, as a base, a cellulose derivative adhesive, such as nitro-cellulose. Cellulose acetate may also be used. I have found it highly desirable to enhance the adhesive properties of the nitro-cellulose by the use of a modifying agent, and for this purpose I prefer a resin, and particularly a synthetic resin, as hereinafter set forth in detail. A suitable solvent and also a plasticizing medium may be used.

80 By permanently plastic, I mean that the adhesive has a longer life than conventional adhesives and is free from any tendency to dry out or granulate or assume a brittle state. That is, in a cap of the present invention, the adhesive exhibits an ability to remain plastic, as well as flexible, resilient and firm, for long periods of time under the various conditions surrounding its manufacture and use upon a container.

95 By non-oxidizable, I mean that the adhesive stratum is not effected by exposure to air or oxygen and oxygen compounds such as may be produced in a sealed container. This freedom from oxidization is directly traceable to the absence of any substantial amounts of oxygen reacting substances in the composition or drying oils such as tung oil or soya bean oil which tend to oxidize and thus contract or granulate to render the stratum brittle and fragile. While the absence of oils which have an extreme oxidizing tendency with a resultant brittling effect is emphasized, I do not mean to exclude the use of oils which do not have this effect. Oils may be divided into three classes, namely (a) oxidizing or drying oils, e. g. tung or linseed (raw China wood or raw linseed oil); (b) semi-oxidizing oils, e. g. processed rape seed oil, and (c) non-oxidizing oils, e. g. such as castor oil and fish oil. The use of the non-oxidizing oils and of small amounts combined therewith of semi-oxidizing oils with the amount being insufficient to have a marked brittling effect is not excluded.

110 By non-drying, I mean that the adhesive is free of substances which dry out themselves or accelerate drying and cause contraction and brittleness. Thus the absence of oxidizable and non-drying constituents favors the preservation of permanent plasticity for considerably longer periods than can be obtained with conventional bonding agents.

120 By firm, I mean that the adhesive, at normal room temperatures or temperatures somewhat above or below normal, is non-tacky and does not flow. It is, however, flexible and yielding or resilient, and is plastic, so that it does not fracture or crack. These qualities are important in preserving the necessary continuous liquid-resistant barrier in a cap, and insure that the bond as well as the protective adhesive will not break down where the cushion liner deforms.

130 In these particular respects, namely the permanently plastic, and non-oxidizable and non-drying characteristics and firmness, as just explained, of the union between the liner and facing spot, the cap of the present invention improves upon the conventional article, and in addition has all of the various advantages recited in my aforesaid patent.

140 The adhesive of the present invention is fusible at a relatively low temperature, water insoluble and acid-resisting, gas-resistant, forms a thin continuous, elastic and resilient coating or layer between the facing disc and the cushion liner.

150 The cap of the present invention is, therefore,

an improvement over conventional caps, in that by reason of the permanent plasticity of the adhesive and its freedom from oxidization and drying and its firmness under temperature conditions usually encountered, the facing is held to the liner securely throughout its area and no opportunity is presented for objectionable slipping or separation of the facing or disintegration of the continuous barrier layer. Hence, the seal is maintained and opportunity for contact of the contents with the cushion material of the liner is reduced to a minimum.

Such conditions as shrinkage of the liner due to curing or storage, or bulging of the liner upon capping a container or upon becoming wetted do not impair the union between the facing and the liner, since the constant plastic nature of the adhesive and its incident flexibility and resilience compensate for these physical deformations without affecting the bond or the continuous protective barrier constituted by the adhesive stratum.

The cap of the present invention, furthermore, and of equal importance with the other advantageous characteristics, is capable of production at a considerable saving over the cost of producing conventional caps. This is due (1) to the use of less expensive adhesive; (2) to a shorter period of operation of affixing the spot to the cap and in producing the sheet or strip spot material, and (3) the spot material or the caps do not have to be stored or maintained or acted upon in a predetermined temperature controlled atmosphere or refrigerated, since the adhesive although heat sensitive and thermo-plastic, is, nevertheless, firm at normal or room temperatures and does not melt and flow or tend to dry when the temperatures are somewhat elevated above normal. The same advantageous condition is maintained at reduced temperatures. The advantages of these factors with resultant saving in the cost of production are appreciable when it is understood that substantially 80 million gross of caps are produced yearly.

It is a further objection of present day spot crowns that when subjected to an indentation pressure near the edge, the spot lifts, i. e. the edge separates from the liner. Thus any pressure upon the spot near the edge thereof will act to loosen the same, producing an unreliable closure. Indentation pressures, of course, occur at the capping machine as well as in the hoppers of the crowning machine where the caps are subjected to agitation. Frequently also these indenting pressures are exerted during the handling of the caps. When the edge of the spot is turned up even to a slight extent, any sliding action of the flared skirt of another crown contacting with the spot will dislodge it, sometimes completely. As a result, the spots are loosened or entirely separated and when the crown is applied to a container, the spot may drop into the container or often the spot having become separated the cap is applied without the spot. Either of these conditions will produce deterioration of the product being bottled and is especially true in connection with pressure beverages as well as beer. The cap having a spot united to the liner thereof by a permanently plastic varnish-like coating in accordance with the present invention, is resistant to these objectionable indenting pressures notwithstanding that the spot be repeatedly subjected to the same.

As is well understood, in the punching out of spots from ribbon or sheet material, there occurs considerable waste, possibly 40%. With the

present material, and particularly in the case of metal foils such as tin or aluminum, this waste can be compacted or compressed and directly melted for producing secondary pig metal or may be melted down with other metals in the foundry for the manufacture of alloys such as Alloy 12. Stated again, the use of a foil having a plastic varnish coating increases by several hundred per cent the value of the recovery from the waste over present materials.

In connection with the avoidance of temperature controlled conditions or refrigeration, I have found that a container having a cap of the present invention applied thereto is capable of sterilization without injury to the spot facing or its adhesive bond to the liner. This is advantageous in that the cap can be used upon bottled goods which must be sterilized and the sterilization can take place with the cap on the container, thereby saving a considerable expense in operation.

Referring to the drawing:

Figure 1 represents a bottom plan view of the usual crown cap having the cushion liner and center spot applied thereto.

Figure 2 is a sectional view of the cap of Figure 1 and showing the use of a center spot of paper provided with a resistant surface coating.

Figure 3 is a sectional view of the cap of Figure 1 showing a metal foil facing.

Figure 4 is a view representative of a strip or sheet of the spot material comprising a layer of paper having a coating of varnish on its exposed surface and a layer of adhesive on its undersurface from which the spot of Figure 2 is formed by punching.

Figure 5 is a view representative of a sheet or strip of spot material comprising a layer of metal foil having a coating of adhesive on its undersurface from which the spot of Figure 3 is formed by punching.

Figure 6 is a view of a spot after the same has been punched from the strip or sheet material of Figure 4.

Figure 7 is a sectional view of the spot of Figure 6.

Figure 8 is a view of the spot punched from the foil material of Figure 5, and

Figure 9 is a sectional view of Figure 8.

Referring to the drawing, I have illustrated in Figure 1 an ordinary crown shell 10 having a top 11 and a crimped skirt 12.

Affixed to the shell in the usual manner as by a heat and/or pressure sensitive adhesive or lacquer 10' is a cushion disc or liner 13 of natural cork, cork composition, pasteboard, rubber or rubber composition, or any of the known materials.

A center spot 14 of less diameter than that of the cushion liner 13 is attached to the liner by means of a stratum of adhesive 15. This facing spot is of an area to engage the sealing lip of a container and prevent the contents of the container from contacting with the material of the liner 13.

While the invention is particularly concerned with center spot facings, as shown in Figure 1, it is also applicable to overall facings, that is facings which are coextensive with the area of the liner or disc.

The center spot 14 will comprise the usual spot material such as paper 16, as shown in Figure 2, or metal foil 17, as shown in Figure 3. In the case of paper, the spots 14 are made of express, Kraft rope or other tough qualities having a

hard or high gloss finish and are preferably coated with an acid, alkali and oil and water-resistant varnish 18. In the case of the metal foil spot 17, this usually is aluminum or tin foil and its exposed surface is ordinarily not treated.

The undersurface of the spot is provided with a continuous stratum of the adhesive 15 by which the spot is united to the liner 13.

In Figure 4, I have shown a laminated strip or sheet of paper facing material comprising a continuous coextensive underlayer 15 of adhesive, an intermediate layer 16 of paper and a continuous coextensive surface layer 18 of varnish. In Figure 5, I have shown a strip or sheet of metal foil facing material, wherein the continuous and coextensive layer of adhesive is indicated at 15 and the foil at 17. It will be understood that the unitary laminated structure comprising a coextensive and continuous layer of adhesive facing material of paper and resilient varnish or foil, is fed to a suitable punching machine, as described in my aforesaid patent, from which the spots or overall facings are produced and applied to the cushion liner of the cap by heat and pressure.

Referring to Figure 6, I have shown a spot punched from the material of Figure 4 and in Figure 7, I have shown a section of the same showing the unitary character of the article. In Figure 8, I have illustrated a spot punched from the material of Figure 5 and in Figure 9 a section through the same.

The usual practice in the manufacture of caps of the type disclosed has been to employ gutta percha in tissue or composition form which is a heat-sensitive adhesive and which is rendered tacky by the action of heat at the spotting machine and while in this condition the spot is punched out and pressed into contact with the exposed surface of the liner 13 and united thereto by heat and pressure. The usual procedure is in accordance with the method described in my Patent No. 1,788,260, granted January 6, 1931. Gutta percha, however, presents the several objections above mentioned which impair the utility of the cap.

Gutta percha is probably the most widely recognized and used of the various adhesives and cements and is quite satisfactory. The gutta percha is in the form, however, of an oxidizable composition and frequently in storage, as well as when used upon a container, oxidation and drying take place and the adhesive bond becomes brittle or granulates, so that the adherence of the spot to the liner is seriously reduced. So much so, in fact, that where the caps are allowed to remain in storage or are being cured and the liner 13 expands or contracts, the relatively fragile bond is broken and disrupted and the spot is loosened, so that the cap cannot be used. This same condition occurs where the cap is used upon pressure beverages, since the bond becomes stiff or fragile and any inequalities which are produced in the liner as by capping or internal pressures or moisture act to affect the bond, so that the spot becomes loosened and the continuous stratum is disrupted whereupon the contents seep past the spot into contact with the cushion material. In some cases, this actually causes contamination of the product and where seepage exists, should a break in the bond have occurred, the bond is completely lost, since the soaking of the liner will produce a warping which the adhesive

uniting the facing to the liner is incapable of compensating for.

I have found that with a cap of the center spot type wherein the center spot is united to the cushion layer, in the manner now to be described, that a permanent and continuous liquid-resistant bond is assured between the spot facing and the cushion layer and one which will not deteriorate in storage or become defective under the normal conditions of usage, i. e. is unaffected by deformation of the liner disc.

I employ as the adhesive 15 a composition having all of the advantages of gutta percha as set forth in my aforementioned patent, i. e. it is heat fusible at a relatively low temperature, water insoluble and acid-resistant, gas-resistant, elastic and resilient and forms a thin continuous coating or stratum. But additionally and, moreover, the present composition (1) is permanently plastic, (2) is non-drying and non-oxidizable and hence does not assume a brittle state, and (3) is firm, i. e. non-tacky and does not flow at normal room temperatures or somewhat elevated temperatures or harder at reduced temperatures remaining within the limits usually encountered plastic, resilient and flexible. Gutta percha tends to soften and flow at but slightly raised temperatures and must often be refrigerated. On the other hand, the cap of this invention may be applied to a container and subjected to sterilization temperatures without injury.

The composition which I employ, i. e. a plastic varnish coating, is prepared as a flowable mass such as a paint or lacquer and is spread or sprayed upon the sheet or strip paper or foil surface, as desired. This composition comprises a resin, preferably a synthetic resin of the polyhedric alcohol-polybasic acid ("Glyptal") type, or a "Rezyl" resin, or a "Vinylite" resin (vinyl acetate), a cellulose derivative, such as nitro-cellulose, a plasticizer, such as the aliphatic tartrates and phosphates, and a solvent preferably an organic solvent having proper drying properties. These vinylite resins are usually polymers of vinyl acetate or vinyl chloride, or mixtures of vinyl acetate and the chloride. Vinyl acetate particularly can be combined well with soluble cottons (nitro-cellulose).

The resin is not limited to the glyptal or rezyl type, but should be one capable of dissolving the cellulose derivative and have a high coefficient of plasticity.

The resin or the composition may be modified by adding thereto in small percentage, non-drying vegetable oils such as castor oil to increase the plasticity. Semi-drying or drying oils are not desirable as they undergo oxidation.

Any suitable cellulose derivative may be used and in addition to nitro-cellulose, I use cellulose acetate.

The resin serves to modify and enhance the adhesive properties of the nitro-cellulose, and hence is a desirable modifying agent.

I have mentioned the particular plasticizers but it will be understood that others equally capable of acting as a solvent for the nitro-cellulose are employed. In this connection, I prefer butyl tartrate. Also tricresylphosphate and phthalates such as dibutyl and amyl phthalates are employed. I also use methyl abietate with either ethyl or butyl alcohol. This latter is particularly useful for dissolving dammer and natural resins, as well as vinylite resins, where rubber is desired as a constituent of the plastic var-

1,956,481

nish. I find that a plastic coating of rubber containing varnish is also useful as the adhesive.

The organic solvent preferably consists of toluol, ethyl acetate, which promotes quick drying, and denatured alcohol, but, of course, other solvents capable of dissolving the mixture may be employed. Butyl acetate and butyl alcohol may also be used in the solvent mixture, as well as benzol although it is not preferred. I do not wish to be limited with respect to the solvent employed, provided, it imparts to the adhesive material proper drying properties.

A preferred composition of the above ingredients is given below.

	Per cent
Synthetic resin-----	10
Nitro-cellulose-----	14
Plasticizer-----	6
Toluol-----	27
Ethyl acetate-----	33
Denatured alcohol-----	10

The solution is applied to the paper or foil by spreading or spraying and will dry at normal temperatures in about twenty minutes.

It is to be noted that the composition is devoid of oxidizing oils which would tend to make the finish or coating brittle. However, it is possible to combine with the synthetic resin the semi-oxidizing or non-oxidizing oils to make a suitable composition, and, therefore, I do not intend to exclude the use of oils of this character either in combination with the other ingredients or as a substitute for one or more of the ingredients mentioned above.

Instead of allowing the adhesive coating to assume a firm and plastic condition without positive heating and drying, I apply the solution to the paper or foil at a temperature of about 200° F. and dry the coating at substantially the same temperature. This drying is accomplished in from one to two minutes at 200° F. and effects a considerable saving in time period of operation. It is advisable to keep drying temperature below 350° even though time of drying is short. The drying cycles will naturally vary with the degree of air change, and the tendency is to shorten time of drying. There is formed a permanently plastic coextensive coating or layer, as shown in Figures 4 and 5, whereby spots of the structure shown in Figures 6 and 8 may be readily punched therefrom. The adhesive is applied to the cushion liner by the usual spotting machine and is heat-sensitive, whereby it is rendered fusible by the heating instrumentality of the spotting machine and immediately pressed into bonded relation with the exposed surface of the cushion liner. Thereupon, the adhesive assumes a firm and permanently plastic condition, whence it is compensatory for any physical changes which occur in the cushion liner and is neither broken nor strained, nor is its continuous, impermeable character disrupted by the expansion or contraction of the liner, so that the spot and liner are permanently connected throughout the area of their respective contact surfaces by a continuous protective barrier.

In view of this permanently plastic and firm connection between the facing and the liner disc, the caps may be manufactured and stored without fear of the spots loosening and may be applied to containers, particularly those of the pressure beverage type with assurance that the spot will not separate from the liner to either

weaken the seal or permit the contents to contact with the liner material.

I have discovered that by employing an adhesive of the character set forth, it is unnecessary to pre-size or treat the surface of the metal foil before applying the adhesive. Moreover, the adhesive stratum does not tend to swell when subjected to moisture and does not lose its adhesive properties throughout pasteurizing temperatures which may run as high as 185° F. Further, I have discovered that a stratum of this character has an adhesive affinity for metal foil, particularly, and also for other facings to substantially the same extent as for cork. This affinity becomes evident after extended use of a cap of this character. It is observed that there is virtually no tendency for the metal foil center to fall from or to readily separate from the cushion layer. Upon forced separation of the facing and cushion layer, a very large portion of the adhesive stratum adheres to the center spot facing and substantially to the same extent as to the cork.

Moreover, I have discovered a very unusual property, namely, that the mechanical pressure to which the facing and adhesive are subjected while the cap is positioned on the bottle improves or enhances the adherence of the center spot facing to the cork disc. In other words, actual tests have shown that, although center spot caps containing a gutta percha stratum deteriorate from the date of manufacture, particularly after being applied to a bottle, so far as adhesion of the center spot to the cushion disc are concerned, the caps of my application actually improve and when examined after a period of use the spots are more firmly united to the cushion disc than when the caps are first manufactured. This continued improvement in the adhesion has been observed throughout periods of over a year and is a vital characteristic of this invention.

I claim:

1. In a cap which includes a metal shell, a cushion liner, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a cellulose derivative adhesive.

2. In a cap which includes a metal shell, a cushion liner, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a cellulose derivative adhesive and a modifying agent enhancing the adhesive characteristics of said derivative.

3. In a cap which includes a metal shell, a cushion liner, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a nitro-cellulose adhesive base.

4. In a cap which includes a metal shell, a cushion liner, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a nitro-cellulose adhesive base and a modifying agent enhancing the adhesive properties of the nitro-cellulose.

5. In a cap which includes a metal shell, a cushion liner of cork, a center facing of metal foil of less diameter than the cushion liner posi-

tioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a cellulose derivative adhesive.

- 5 6. In a cap which includes a metal shell, a cushion liner of cork, a center facing of metal foil of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner
10 and uniting the two, said stratum comprising a cellulose derivative adhesive and a modifying agent enhancing the adhesive characteristics of said derivative.

- 15 7. In a cap which includes a metal shell, a cushion liner of cork, a center facing of metal foil of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a
20 nitro-cellulose adhesive base.

- 25 8. In a cap which includes a metal shell, a cushion liner of cork, a center facing of metal foil of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and liner and uniting the two, said stratum comprising a
30 nitro-cellulose adhesive base and a modifying agent enhancing the adhesive properties of the nitro-cellulose.

- 35 9. In a cap which includes a metal shell, a cushion liner, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and cushion liner and uniting
40 the two, said stratum comprising a cellulose derivative adhesive and a resin.

- 45 10. In a cap which includes a metal shell, a cushion liner of cork, a center facing of less diameter than the cushion liner positioned on the latter and a stratum of heat-fusible adhesive interposed between the facing and cork cushion and

uniting the two, said stratum comprising a cellulose derivative adhesive and a resin.

11. In a cap which includes a metal shell, a cushion liner, a center facing of metal foil, and a stratum of heat-fusible adhesive interposed between the facing and cushion liner and uniting the two, said stratum comprising a cellulose derivative adhesive and a resin.

12. In a cap which includes a metal shell, a cushion liner of cork, a center facing of metal foil, and a stratum of heat-fusible adhesive interposed between the facing and cork cushion and uniting the two, said stratum comprising a cellulose derivative adhesive and a resin.

13. In a cap which includes a metal shell, a cushion liner, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and cushion liner and uniting the two, said stratum comprising a nitro-cellulose adhesive and a resin.

14. In a cap which includes a metal shell, a cushion liner of cork, a center facing of less diameter than the cushion liner positioned on the latter, and a stratum of heat-fusible adhesive interposed between the facing and cork cushion and uniting the two, said stratum comprising a nitro-cellulose adhesive and a resin.

15. In a cap which includes a metal shell, a cushion liner, a center facing of metal foil, and a stratum of heat-fusible adhesive interposed between the facing and cushion liner and uniting the two, said stratum comprising a nitro-cellulose adhesive and a resin.

16. In a cap which includes a metal shell, a cushion liner of cork, a center facing of metal foil, and a stratum of heat-fusible adhesive interposed between the facing and cork cushion and uniting the two, said stratum comprising a nitro-cellulose adhesive and a resin.

ALBIN H. WARTH.

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J. ALBERTI.
CLOSURE.
APPLICATION FILED OCT. 3, 1914.

1,199,026.

Patented Sept. 19, 1916.

Fig. 1.

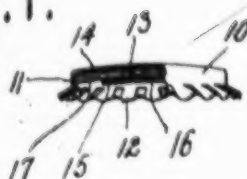


Fig. 2.

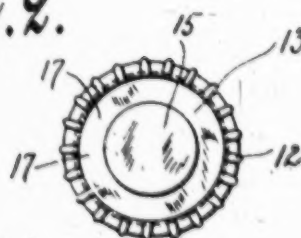


Fig. 3.

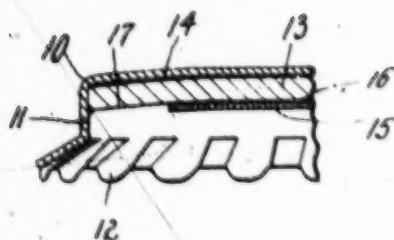
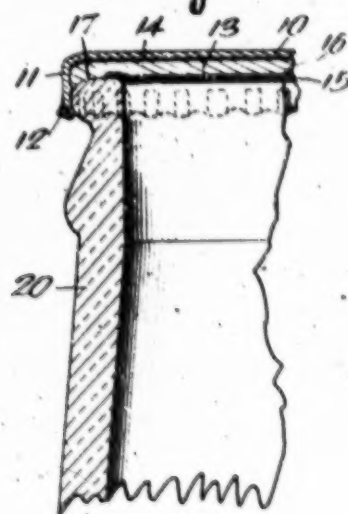


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN ALBERTI, OF NEW YORK, N. Y., ASSIGNOR TO THE INTERNATIONAL CORK COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

CLOSURE.

1,199,026.

Specification of Letters Patent.

Patented Sept. 19, 1916.

Application filed October 3, 1914. Serial No. 864,867.

To all whom it may concern:

Be it known that I, JOHN ALBERTI, a citizen of the United States, and a resident of the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Closures, of which the following is a specification.

The present invention relates to closures or stoppers for bottles and other receptacles; more particularly it pertains to closures of the cap variety including those termed "crown corks." Closures of this type usually comprise a metallic cap or crown to be locked to the neck of the bottle, etc., and a sealing disk or packing of cork or the like, that is held within the cap, for instance, by means of a suitable sticking material.

It has been found in practice that in many cases it is impracticable to permit the liquid contents of the bottle or other receptacle to come into contact with the sealing disk of cork or like material, as some liquids, such as pure water, mineral water or beverages of delicate flavors, are apt to acquire a "corky" taste. The commercial value of such liquids is thus greatly impaired. In order to obviate this and similar defects of the crown corks and like closures, it has been proposed heretofore to cover the outer, that is to say the exposed faces of the sealing disks, with thin layers of pliable or ductile metal, such as chemically pure block tin, aluminium or alloys of tin. With the use of these closures, however, serious difficulties have been found, which prevent the same from becoming commercially successful. One of these defects consists in that the layer of metal is apt to wrinkle and, thus, to prevent the formation of an airtight seal. Moreover, the metal, owing to its inherent properties, cannot as readily conform to defects in the glass, or other materials of which the bottle or receptacle is made, as cork or like substances will do. The result is that the slightest defect in the neck of the receptacle prevents the formation of airtight seals with these closures. When it is taken into consideration that bottles, or like receptacles upon which crown corks or similar closures are used, are manufactured in great quantities and at the lowest possible cost, it will be obvious that little can be taken in the manufacture thereof

to obtain smooth and perfect-necked articles, 55 and, inasmuch as the metal-covered closures of the type above described did not fulfil, as mentioned above, in conjunction with rough and imperfect bottle necks their purpose, it will be easily understood why the 60 commercial use of such closures could not be successful.

It is now one of the objects of the present invention to obviate the defects of the covered closures heretofore in use, that is to say 65 to obtain a closure which forms under all circumstances an airtight seal, yet prevents completely the contamination of the bottle contents.

With this and other objects in view, which 70 will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter fully described, pointed out in the appended claims 75 and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and details of construction within the scope of the appended claims 80 without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accom- 85 panying drawings, in which:—

Figure 1 is an elevation, partly in section, of a bottle closure constructed in accordance with the present invention; Fig. 2 is a bottom plan view thereof; Fig. 3 is a vertical 90 section taken through a portion of the closure on an enlarged scale; and Fig. 4 is a similar section taken through a portion of the closure and a bottle to which it is applied. 95

In the drawings, a bottle closure of the crown cork type has been shown for purposes of illustration, it being, however, obvious that the invention may be applied to any and all closures of the cap variety, the 100 forms of the metallic caps of the closures being immaterial as far as the invention is concerned, as will readily appear from the following description.

Referring now more particularly to the 105 drawings, the numeral 10 indicates a cap, comprising a substantially cylindrical head 11 and a corrugated flange 12, which is

adapted to be locked in the well known manner to the exterior of a bottle neck. This cap is made, as usual, of thin sheet iron coated with tin. In the cap is disposed a
 5 sealing disk or packing 13 of cork or like material, which is united with the cap, for instance by an interposed sticking material 14, or in any other suitable manner. To the
 10 outer, or in other words to the exposed face of the sealing disk, is attached concentrically with the latter a thin layer of tenacious or ductile metal, such as, for instance, chemically pure block tin, aluminium or an alloy of tin. This layer is made in the form of a
 15 disk, denoted by the numeral 15, its diameter being smaller than the diameter of the sealing disk 13, and being stuck to the latter by an interposed cementing medium, shown at 16. This cementing medium should,
 20 preferably, be of the type that is insoluble in liquids after it has set and formed a union between the packing and the metallic disk; it should be insoluble at normal temperature and also at temperatures above the
 25 normal. It has been found in practice that albumen is particularly adapted for use in connection with this invention, it being inodorous, tasteless, soluble in water and thus readily preparable for use. Moreover albumen coagulates easily and is rendered in-
 30 soluble at about 140° Fahrenheit, the coagulation resulting in a firm union between the packing of the cork or the like and the metallic disk, such union being brought about almost instantaneously. In manufacturing
 35 these closures, the cementing medium is applied either to the exposed face of the sealing disk or packing of cork or the like, or it may be spread over that surface of the metallic disk that is to be in contact with the
 40 packing, or it may be carried by a layer of fibrous material that is to be interposed between the two disks, the metallic disk being then concentrically positioned in, relation
 45 with and upon the packing, the entire closure being put, if necessary, under pressure and heated, whereby the cementing medium is coagulated, holding thus the metallic disk in place.
 50 It should be noticed that in these closures an annular portion of the outer face of the packing adjacent its periphery is exposed, the remainder being covered by the metallic disk 15. The exposed portion, de-
 55 noted in the drawings by the numeral 17, may vary, of course, according to the requirements, that is to say according to the thickness of the wall of the bottle neck.

It is obvious that, while herein a specified
 60 cementing medium has been described, others may just as well be used without departing from the spirit of the invention, which lies mainly in the provision of a metallic disk that covers a portion of the outer face of the packing of cork or the like

of the closures, leaving an annular portion adjacent to the peripheral section of the packing exposed or uncovered.

The operation of the closure herein described is as follows: When the cap is secured to the neck of the bottle 20 in the well known manner, the wall of the neck of the bottle is forced against the exposed annular
 75 portion of the packing, the metallic disk of the closure, being slightly larger than the inner diameter of the neck of the bottle, effectively prevents the tainting of the contents of the bottle, inasmuch as it prevents the contents from coming into contact with the packing. Inasmuch as, however, the
 80 wall of the bottle neck is pressed against the packing, the closures constructed in accordance with this invention retain the advantages of the ordinary and absolutely perfect crown corks or similar closures, that
 85 is to say they seal the bottle or other receptacle against escape of gaseous and liquid matter.

What I claim is:—

1. A closure for receptacles comprising a
 90 metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of ductile metal having a diameter that is substantially smaller than that of said seal-
 95 ing disk but slightly larger than the inner diameter of the neck of the receptacle to which said closure is to be applied, said flat disk being cemented to the exposed face of said sealing disk.

2. A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of ductile metal exterior to said sealing disk,
 100 said flat disk having a diameter that is substantially smaller than that of said sealing disk but slightly larger than the inner diameter of the neck of the receptacle to which said closure is to be applied, said two disks being stuck together by an interposed cementing medium that is coagulated and rendered insoluble by heat.

3. A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of ductile metal exterior to said sealing disk,
 105 said flat disk having a diameter that is substantially smaller than that of said sealing disk but slightly larger than the inner diameter of the neck of the receptacle to which said closure is to be applied, said two disks being stuck together by an interposed cementing medium consisting of a heat coagulated albuminous substance.

4. A closure for receptacles comprising a metallic cap, a sealing disk of cork or the like therein covering the entire inner face of the head portion thereof, and a flat disk of

ductile metal exterior to said sealing disk,
said flat disk having a diameter that is sub-
stantially smaller than that of said sealing
disk but slightly larger than the inner diam-
eter of the neck of the receptacle to which
said closure is to be applied, said two disks
being stuck together by an interposed ce-
menting medium that is coagulated by heat.

Signed at New York, in the county of
New York, and State of New York, this 1st 10
day of Oct., A. D. 1914.

JOHN ALBERTI.

Witnesses:

SIGMUND HERZOG,
S. BIRNBAUM.

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Patented Apr. 23, 1929.

UNITED STATES PATENT OFFICE.

MAURICE VALENTINE HITT, OF PARLIN, NEW JERSEY, ASSIGNOR TO E. I. DU PONT DE NEMOURS & COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE.

NITROCELLULOSE COATING COMPOSITION AND FILM MADE THEREFROM.

No Drawing.

Application filed October 13, 1923. Serial No. 668,285.

This invention relates to coating compositions and films made therefrom, and more particularly to nitrocellulose lacquers and enamels wherein the nitrocellulose has a specific viscosity characteristic and a solvent softener is present to impart certain new characteristics to the lacquers and enamels and films made therefrom, all as more particularly hereafter described.

The invention has as an object the production of nitrocellulose lacquer and enamel compositions containing solvent softeners, particularly nitrocellulose having a certain specific viscosity characteristic. Another object of the invention is to provide such compositions wherein the content of total solids, exclusive of pigments, is more than 15% and the nitrocellulose content more than 7% after the composition has been thinned down to a viscosity between 100 and 300 centipoises as measured by the Stormer viscometer at 28° C. A further object is to properly proportion the ingredients of the compositions, particularly in reference to the pigments, in order to obtain the most advantageous results. A still further object is to provide films and articles coated with films from the aforesaid compositions, which films shall be hard, durable, tough, adhesive, and non-shrinking. Further objects will be apparent as the following description proceeds.

In the manufacture of pyroxylin lacquers and enamels as heretofore carried on, it has not been practicable to make solutions having a nitrocellulose content, after thinning to the extent required for use as a dip or spray lacquer, namely, 100-300 centipoises, of more than about 6%, for with ordinary nitrocellulose, more than this proportion there-of renders the solution too viscous. Moreover in the presence of this maximum amount of nitrocellulose the proportion of gum had to be comparatively low, so that as a rule it has been necessary to limit the total solids content of these old lacquers and enamels, exclusive of pigment, when thinned to spraying viscosity, namely 100-300 centipoises, to less than 13%.

In connection with the compositions of my invention I have found that by using reduced-viscosity nitrocellulose, which may be produced, for example, as described in the application of E. C. Pitman, Serial No. 594,994 filed October 16, 1922, lacquers and enamels may be prepared having a nitrocellulose content, based on the weight of the coating composition, exclusive of pigment, and after the required thinning to between 100 and 300 centipoises, of more than 7%, and, if desired above 9%, and a total solids content, exclusive of pigment above 15%. The main advantage attending the use of a high nitrocellulose, high total solids lacquer or enamel of this kind is that the number of coats which it is necessary to apply to form a coating of the desired thickness is materially reduced.

The description of the nitrocellulose content and total solids content as being determined after the required thinning to from 100 to 300 centipoises, is made necessary because of the fact that pyroxylin lacquers are sometimes made and sold in a concentrated form, that is, with a relatively high nitrocellulose content and high total solids content, but with a viscosity so high that the lacquer must be thinned or diluted with a volatile solvent to reduce the viscosity to the required value. When such old concentrated lacquers of the prior art have been thinned down to a working consistency they have, as explained above, a nitrocellulose content substantially less than 7%, and a total solids content substantially less than 15%. In discussing solutions of cellulose esters, etc., it is customary to indicate the concentration of the solution by reference to the number of ounces of cellulose ester, etc., dissolved in one gallon of solvent. For example, a solution obtained by dissolving 16 ounces of nitrocellulose in one gallon of ethyl acetate would be described as a 16 oz. ethyl acetate solution of nitrocellulose.

The ordinary types of pyroxylin lacquers and enamels heretofore known do not contain a solvent softener. This is quite natural in view of the fact that pyroxylin lacquers

hitherto have been chiefly used for forming very thin films, and there has been less reason why a softener should be used. Furthermore, solvent softeners do not exhibit any special advantages in high viscosity nitrocellulose compositions. The new lacquers and enamels, on the other hand, made from reduced-viscosity nitrocellulose, are intended to enter an entirely new field in a new capacity—namely, as competitors of varnish and enamel paint. They will be used to form a comparatively thick coat on nearly rigid surfaces, and this coat must have sufficient flexibility to withstand ordinary blows and slight bending without cracking. This flexibility is attained by the use of a solvent softener.

It is probably still more important that a solvent softener be present because of the nature of the film made by reduced viscosity nitrocellulose. A solvent softener is important in solutions of reduced viscosity, such as those with which the present invention is concerned, because when the viscosity has been reduced to this degree the film more readily becomes brittle on aging, especially at elevated temperatures. Apparently the reduced viscosity nitrocellulose has less power to retain a non-solvent softener or even a solvent of high volatility, as compared with the ordinary type of pyroxylin which has hitherto been used. By using a solvent softener, and especially one that is substantially non-volatile, the original quality of the film is improved and its life is greatly prolonged. This effect is shown very definitely by tests on aging at 65° C. The use of acetyl-laurin, for instance, makes it possible to stamp the surface satisfactorily even after high temperature storage.

The advantages attending the use of a solvent softener in the new lacquers and enamels, as compared with the use of a non-solvent softener such as castor oil, comprise the great and unexpected improvement in flexibility of the film, better adhesion, freedom from blushing, ease of sanding and buffing, etc. Whereas low viscosity nitrocellulose of the herein described type will not provide a flexible film, yet the addition of a solvent softener will not only remove the brittleness by providing a film whose flexibility is largely retained, but it will also provide a material increase in the final flexibility of the film as compared with the original nitrocellulose itself. In this manner, the original low viscosity nitrocellulose is made available for all forms of lacquers and enamels where flexibility is required, whereas previously such low viscosity solutions had a more limited use even with the presence of a softener like castor oil.

As solvent softeners, I may use, for example, any one or more of the following sub-

stances: dibutyl phthalate, benzyl butyl phthalate (specifically the ortho-phthalates), acetyl-laurin (see G. L. Schwartz application Serial No. 551,734), camphor, and tricresyl phosphate and their equivalents. Among solvent softeners I prefer to use those which are substantially non-volatile, and for that reason dibutyl phthalate is not as good as the others mentioned because its volatility is too high in some cases. However, if it is used in connection with a practically nonvolatile softener it is usually very satisfactory. By the term "solvent softeners" I mean such substances as I have just recited and their equivalents, and preferably such as are liquid below 50° C. and have an appreciable solvent action on pyroxylin.

The following examples are illustrative of my invention, which is not, of course, limited thereto since many changes can be made therein without departing from the spirit and scope of the invention.

EXAMPLE 1.

A lacquer made in accordance with my invention may have the following composition. (the nitrocellulose used in this example having a viscosity, as measured in the form of a 16 oz. C. P. ethyl acetate solution thereof at 28° C., of between 550 and 1500 centipoises):

Lacquer #1.

	Per cent
Nitrocellulose of reduced viscosity	12.5
Butyl acetate	26.2
Butyl alcohol	8.7
Ethyl acetate	10.5
Denatured alcohol	10.0
Acetone	6.7
Methyl alcohol	4.8
Resin or gum	5.4
Toluol	12.9
Acetyl laurin	2.0

100.0

In place of the acetyl-laurin in the above formula, I may use another substantially non-volatile solvent softener such as dibutyl o-phthalate or benzyl butyl ortho-phthalate; the volatile solvents may also be varied in both composition and proportion.

For the resin constituent, I may use any varnish gum or resin that is soluble in the volatile ingredients of the lacquer, examples thereof being dammar, mastic, soft copal, elemi, rosin, sandarac, and shellac.

The viscosity of the above described lacquer #1 as measured by the Stormer viscometer at 28° C. is between 900 and 1100 centipoises. When thinned by adding 40 parts of thinner to 60 parts of lacquer its viscosity is between 100 and 300 centipoises.

1,710,453

The thinner used may have the following composition:

	Per cent.
Ethyl acetate.....	25
Butyl acetate.....	25
Butyl alcohol.....	10
Toluol.....	20
Xylol.....	20
	100

In preparing this lacquer #1, the following procedure may be followed, although the lacquer may also be prepared in various other ways:

Seventy-five parts by weight of a nitrocellulose base solution (a), containing a reduced viscosity nitrocellulose whose viscosity lies between 500 and 1500 centipoises in 16 oz. C. P. ethyl acetate solution, is mixed with thirteen parts by weight of a resin solution to give the necessary resin content as shown above. Softener and toluol are added and the whole mixed until thorough incorporation is produced. A clear dark amber colored solution should be produced.

The nitrocellulose base solution referred to in the preceding paragraph has the following composition:

	Per cent.
Butyl acetate.....	35
Butyl alcohol.....	11
Ethyl acetate.....	12
2-B denatured alcohol.....	16
Acetone.....	3
Methyl alcohol.....	6
Pyroxylin.....	17
Total.....	100

An ordinary barrel type of mixture is used in making up this solution. The nitro-cotton, having a viscosity of about 35,000 centipoises, plus .8% of its weight of crystalline sodium acetate is added to the mixer, care being taken that there is a thorough intermixing of the salt and nitro-cotton. The solvents are then added, and the whole thoroughly mixed until an easily flowing solution is obtained. This solution is then run into barrels which are placed in a closed room maintained at 38-40° C. Samples are taken from these barrels from time to time and viscosity measurements make until the difference between separate viscosity measurements indicates that the reducing action has practically ceased. This has been found by experience to require about four to six weeks for this type of mixture. When this point is reached the barrels are withdrawn from the heated room and stored at ordinary room temperature until such time as the contents are needed for use in regular mixtures. The nitrocellulose component of the reduced viscosity solution, when isolated, and dissolved in C. P. ethyl acetate, forms a solu-

tion having a viscosity of about 600 to 700 centipoises at 28° C.

The resin solution may be prepared in the usual way by dissolving the resin to be used (e. g. dammar, shellac, or elemi) in a solvent mixture in which it dissolves readily, and which mixes readily with the nitrocellulose base solution, and separating the clear solution by decantation after the insoluble portion has settled.

EXAMPLE 2.

Another typical lacquer coming within the scope of my invention has the following composition:

Lacquer #2.

	Per cent.
Nitrocellulose of reduced viscosity..	18.30
Butyl acetate.....	23.40
Ethyl acetate.....	9.60
Butyl alcohol.....	5.40
Denatured alcohol.....	12.40
Acetone.....	1.70
Methyl alcohol.....	3.90
Resin or gum.....	5.80
Benzol.....	1.80
Toluol.....	12.70
Dibutyl phthalate.....	5.00
Total.....	100.00

The viscosity of the above described lacquer No. 2 as measured by the Stormer viscometer at 28° C. is between 1300 and 1500 centipoises. When thinned by adding 40 parts of thinner to 60 parts of lacquer the viscosity is between 100 and 300 centipoises.

In the above described lacquer #2 there may be used for the resin constituent any of the resins or gums mentioned above; and in place of dibutyl phthalate, other solvent softeners may be used.

The pyroxylin used in lacquer #2 has an average viscosity below 400 centipoises, and preferably of about 300 centipoises. This low average viscosity pyroxylin is prepared by mixing twenty-one (21) parts by weight of the nitrocellulose base solution (a) described in connection with lacquer #1 (said base solution containing 17% of nitrocellulose having a viscosity of about 625 centipoises), with about forty-nine (49) parts of a base solution (b) of practically the same solvent composition as base solution (a) but containing 30% of nitrocellulose whose viscosity of about 160 centipoises.

A nitrocellulose base solution (b), containing nitrocellulose whose 16 oz. C. P. ethyl acetate solution has a viscosity of between 90 and 340 centipoises when measured by the Stormer viscometer at 28° C., may be produced by dissolving in a solvent com-

position a soluble nitro-cotton whose 16 oz. C. P. ethyl acetate solution has a viscosity of about 35000 centipoises at 28° C., to form a solution having the following composition:

	Per cent.
Butyl acetate	33.30
Butyl alcohol	5.70
Acetone, C. P.	2.30
Ethyl acetate	11.30
Methyl alcohol, (99%)	5.40
2-B denatured alcohol	12.00
Nitrocellulose	30.00
	100.00

and subjecting the nitro-cotton in this solution to the action of sodium acetate. The detailed procedure for making base solution (b) is exactly similar to that described above for making base solution (a), except that the sodium acetate added is equal to 2% of the weight of the nitrocotton used. The time necessary to obtain the required reaction in viscosity is two to three weeks at 38-40° C.

To manufacture the lacquer, the following procedure is followed:

Forty-nine parts by weight of the 30% base, and twenty-one parts by weight of the 17% base are mixed with twelve and one-half parts by weight of a resin solution, and the necessary amounts of dibutyl phthalate and toluol added. The whole is mixed until a clear dark amber solution is obtained, and it is then ready for application. Reduced to formulation on this basis the composition reads:

	Per cent.
30% base	49.00
17% base	21.00
Resin solution	12.50
Dibutyl phthalate	5.00
Toluol	12.50
	100.00

Although the viscosity of my new coating compositions when ready for use as dip or spray lacquers or enamels, is from about 100 to 300 centipoises, I preferably employ a nitrocellulose whose viscosity-characteristic is such that the finished coating composition will have a viscosity of about 125 centipoises, the nitrocellulose content being above 9%, and, more specifically, a coating composition, with the above approximate viscosity having a nitrocellulose content above 7% and a total solids content, exclusive of pigment, above 15%.

EXAMPLE 3.

Where an enamel is to be prepared a pigment is incorporated in the coating composition, the percentage of pigment being usually between 5 and 30% based upon the weight of the finished enamel. As suitable

pigments there may be mentioned zinc oxide, lithopone, titanium oxide, blanc fixe, ultramarine blue, and carbon blacks. Other mineral pigments and lakes in general may be used. A typical enamel illustrative of my invention has the following composition, the viscosity of the nitrocellulose used therein being between 400 and 1500 centipoises in 16 oz. ethyl acetate solution:

	Per cent.
Pigment	9.00
Pyroxylin	10.50
Resin or gum	7.60
Dibutyl phthalate	6.50
Butyl acetate	21.60
Butyl alcohol	7.20
Ethyl acetate	8.60
Denatured alcohol	15.90
Acetone	1.70
Methyl alcohol	3.90
Benzol	8.40
	100.00

This enamel will show a viscosity in the neighborhood of 1,000 centipoises and will have to be thinned in the neighborhood of 30% of thinner and 70% of enamel to obtain spraying viscosity.

The volatile solvents employed in these high percentage pyroxylin, low viscosity coating compositions are chiefly acetone, acetone oils, the lower alcohols (methyl, ethyl, etc.) and the lower alkyl acetates, such as ethyl, propyl, butyl, and amyl acetates. As diluents there may be used the volatile petroleum hydrocarbons, and the benzenoid hydrocarbons such, for example, as benzene and toluene. I have found it advantageous to employ low boiling alcohols and certain high boiling esters or ketones, such as butyl acetate, in approximately the proportions described; that is, the low boiling alcohols approximately in the same proportion as the nitrocellulose and the high boiling esters or ketones approximately from an equal proportion to about three times the proportion of nitrocellulose. I have found it advantageous to have the proportion of resin or gum in many cases approximately two-thirds to one-half that of the nitrocellulose and the solvent softener approximately one-third to one-seventh that of the nitrocellulose as shown by the foregoing examples, although some deviation may be made from these proportions. The proportion of pigment will vary from 5 to 30% as stated previously, according to the nature of the lacquer or enamel desired to be produced, and the quality of pigment; as shown by the examples, the proportion is preferably 5 to 9 parts for 10 or 12 of nitrocellulose.

The viscosity values herein mentioned are values obtained at 28° C., with a 500 g. weight, with the aid of the Stormer viscometer, and, in the cases of nitrocellulose, they

are the values of a 16-oz. chemically pure ethylacetate solution thereof. The viscosity characteristic of the nitrocellulose employed in the foregoing compositions should be below 1500 centipoises when employing low viscosity nitrocellulose, and will often preferably be below 400 centipoises. In view of the favorable action of sodium acetate or its equivalents in reducing the viscosity of nitrocellulose, as herein described, there will be no disintegration thereof so as to reduce the nitrogen content to too low a figure, and it is therefore unnecessary to specify a lower value for the viscosity characteristic, but such may be well below 400 or even 100 centipoises.

The films produced from the lacquers and enamels described above will be hard, durable, tough, adhesive, and relatively non-shrinking. The films will, as before stated, be used to form relatively thick coats on rigid surfaces, and owing to the presence of solvent softeners, they will have good flexibility and the non-softeners will reinforce the low viscosity nitrocellulose (which is relatively very low), so that both materials will cooperate in providing a film which will not become brittle on aging and not show such signs of deterioration as might be shown by a low viscosity film containing no solvent softener. The presence of resins also materially enhances the quality and adhesion of the films, and thus, in conjunction with the solvent softeners, provides a film not heretofore produced. By the addition of pigments in the relative proportions described, a successful colored film may be produced.

As many apparently widely different embodiments of this invention may be made without department from the spirit thereof, it is to be understood that I do not intend to limit myself to the specific embodiments thereof except as indicated in the appended claims.

I claim:

1. A nitrocellulose coating composition comprising in combination nitrocellulose whose viscosity characteristic is such that a 16-oz. C. P. ethyl acetate solution thereof has a viscosity at 28° C. of below 1500 centipoises; and a solvent softener for the nitrocellulose.

2. A nitrocellulose coating composition comprising in combination nitrocellulose whose viscosity characteristic is such that a 16-oz. C. P. ethyl acetate solution thereof has a viscosity at 28° C. of below 400 centipoises; and a solvent softener for the nitrocellulose.

3. A nitrocellulose coating composition comprising in combination a reduced viscosity nitrocellulose whose viscosity characteristic is such that a 16-oz. C. P. ethyl acetate solution thereof has a viscosity at 28°

C. of below 1500 centipoises; a solvent softener for the nitrocellulose having a melting point below 50° C. and being non-volatile.

4. A pyroxylin coating composition having a viscosity of between 100 and 300 centipoises at 28° C., and containing more than 9% of nitrocellulose, a volatile nitrocellulose-solvent, and a solvent softener for the nitrocellulose, the viscosity-characteristic of said nitrocellulose being such that a 16-oz. C. P. ethyl acetate solution thereof has a viscosity at 28° C. of less than 1500 centipoises.

5. A pyroxylin lacquer comprising, in combination, nitrocellulose, a substantially non-volatile solvent softener therefor, and a gum, said nitrocellulose having a viscosity characteristic which, when expressed in terms of the viscosity of a 16 oz. C. P. ethyl acetate solution thereof, is less than 1500 centipoises.

6. A lacquer as defined in claim 2 in which the softener comprises dibutyl phthalate.

7. A pyroxylin enamel comprising nitrocellulose, a solvent softener therefor, a pigment, and a gum, the viscosity-characteristic of the nitrocellulose, expressed in terms of the viscosity of a 16 oz. ethyl acetate solution thereof, being below 400 centipoises.

8. A coating composition comprising a low viscosity nitrocellulose having a viscosity characteristic below 1500 centipoises as defined; a solvent softener in the proportion of about two-thirds to one-seventh of the nitrocellulose; and a resin in the proportion of less than one-half of the proportion of the nitrocellulose.

9. A coating composition comprising a low viscosity nitrocellulose having a viscosity characteristic below 1500 centipoises as defined; a solvent softener in the proportion of about one-seventh to two-thirds that of the nitrocellulose; a resin less than one-half that of the nitrocellulose; and a low boiling alcohol in about the same proportion as the nitrocellulose.

10. A coating composition comprising a low viscosity nitrocellulose having a viscosity characteristic below 1500 centipoises as defined; a solvent softener in the proportion of about one-seventh to two-thirds that of the nitrocellulose; a resin less than one-half the proportion of the nitrocellulose; a low boiling alcohol in about the same proportion as the nitrocellulose; and a high boiling ketone or ester in a proportion from about one to three times that of the nitrocellulose.

11. A coating composition comprising a low viscosity nitrocellulose having a viscosity characteristic below 1500 centipoises as defined; a solvent softener from about one-seventh to two-thirds the proportion of the nitrocellulose; and a resin in less than one-half the proportion of nitrocellulose.

12. A coating composition comprising a

low viscosity nitrocellulose having a viscosity characteristic below 1500 centipoises as defined; a resin, and a pigment; the proportion of the resin being less than half that of the nitrocellulose, and the proportion of pigment being from 5 to 30 parts for about 12 of the nitrocellulose.

13. A coating composition comprising a low viscosity nitrocellulose having a viscosity characteristic below 1500 centipoises as defined, a resin, a solvent softener, and a pigment; the proportion of resin being less than half that of the nitrocellulose, the proportion of softener being from one-seventh to two-thirds that of the nitrocellulose, and the proportion of pigment being from 5 to 30 parts for about 12 of the nitrocellulose.

14. A coating composition comprising a low viscosity nitrocellulose having a viscosity characteristic below 1500 centipoises as defined, in the proportion of about 10 parts; a resin less than 5 parts; a pigment 5 to 9 parts; a solvent softener from 2 to 7 parts; a small proportion of non-drying oil, but substantially no drying oil; and solvents to provide a flowable or spraying lacquer.

15. A coating composition comprising a low viscosity nitrocellulose having a viscosity characteristic below 1500 centipoises as defined, in the proportion of about 10 parts; a solvent softener from 2 to 7 parts; a pigment 5 to 9 parts; and solvents to provide a flowable or spraying lacquer.

16. An article coated with a hard, durable, tough, adhesive, film containing nitrocellulose whose viscosity characteristic is below 1500 centipoises as defined, and a solvent softener.

17. An article coated with a hard, durable, tough, adhesive, substantially non-shrinking film containing nitrocellulose whose viscosity characteristic is below 1500 centipoises as defined, a solvent softener, and a resin.

18. An article coated with a hard, durable, tough, adhesive, substantially non-shrinking film containing nitrocellulose whose viscosity characteristic is below 400 centipoises as defined, and a solvent softener.

19. An article coated with a hard, durable, tough, adhesive, substantially non-shrinking film containing nitrocellulose whose viscosity characteristic is below 1500 centipoises, a solvent softener in the proportion of one-seventh to two-thirds that of the nitrocellulose, and a pigment in the proportion of 5 to 9 parts for 12 of nitrocellulose.

20. An article coated with a hard, durable, tough, adhesive, substantially non-shrinking film containing nitrocellulose whose viscosity characteristic is below 1500 centipoises, a resin in the proportion of less than half that of the nitrocellulose, and a pigment in the proportion of 5 to 9 parts for 12 of nitrocellulose and a solvent softener.

21. An article coated with a hard, durable, tough, adhesive, substantially non-shrinking film containing nitrocellulose whose viscosity characteristic is below 1500 centipoises, a solvent softener in the proportion of one-seventh to two-thirds that of the nitrocellulose, a resin in the proportion of less than half that of the nitrocellulose, and a pigment in the proportion of 5 to 30 parts for 12 of nitrocellulose.

In testimony whereof I affix my signature.
MAURICE VALENTINE HITT.

CERTIFICATE OF CORRECTION.

Patent No. 1,710,453.

Granted April 23, 1929, to

MAURICE VALENTINE HITT.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, line 35, for the word "be" read "been"; page 3, line 39, for the word "mixture" read "mixer"; page 5, line 24, for the compound word "non-softeners" read "solvent softeners"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of June, A. D. 1929.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.

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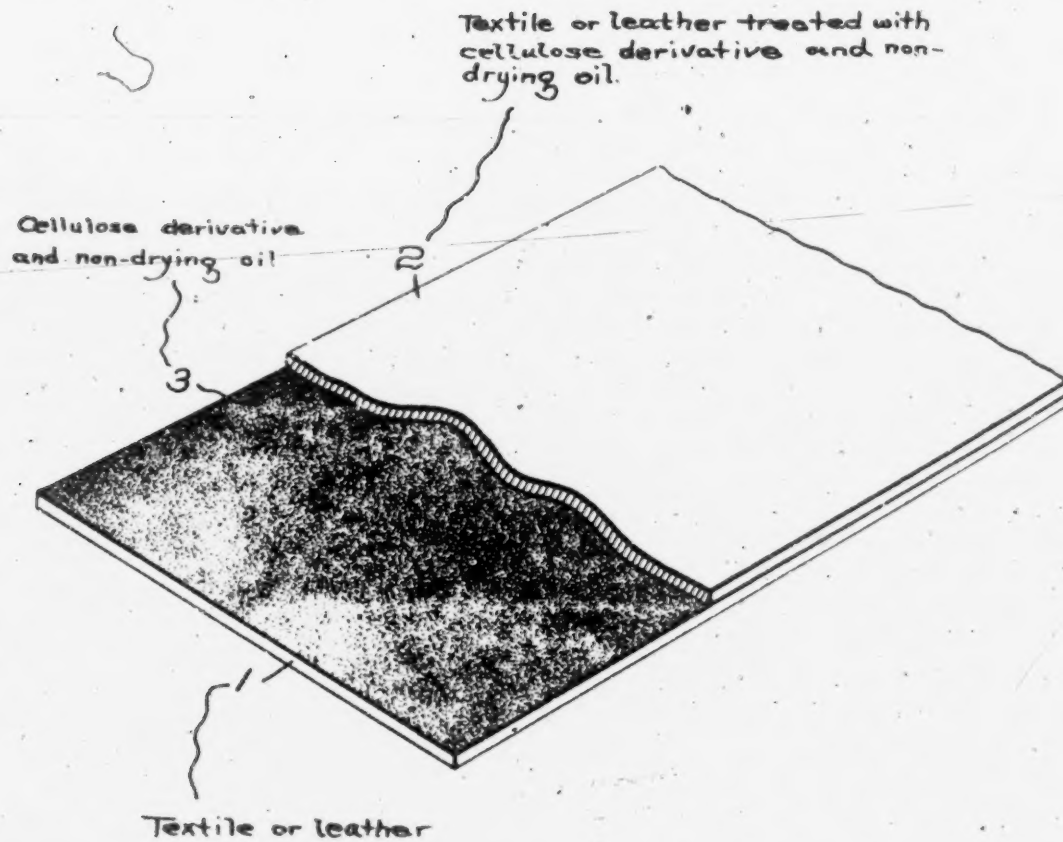
J. J. BYERS.

SHEET MATERIAL AND METHOD OF TREATING THE SAME.

APPLICATION FILED JAN. 10, 1917.

1,325,075.

Patented Dec. 16, 1919.



Inventor:
Joseph J. Byers,
by *Ernest Booth Janning* *Attorney*

UNITED STATES PATENT OFFICE.

JOSEPH J. BYERS, OF BROOKLINE, MASSACHUSETTS, ASSIGNOR TO PRODUCTS SYNDICATE, INC., OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

SHEET MATERIAL AND METHOD OF TREATING THE SAME.

1,325,075.

Specification of Letters Patent.

Patented Dec. 16, 1919.

Application filed January 10, 1917. Serial No. 141,667.

To all whom it may concern:

Be it known that I, JOSEPH J. BYERS, a citizen of the United States, and a resident of Brookline, county of Norfolk, State of Massachusetts, have invented Improvements in Sheet Materials and Methods of Treating the Same, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to the art of applying a sheet or layer of material to another, for the purpose of imparting thereto certain desirable qualities, as well as to the improved product obtained by said method. The invention is applicable to any sheet material, but the invention contemplates more particularly the application thereof to textile or other fibrous materials, such as leather for example, at least one of the sheets having preferably been treated so as to impart thereto wear-resisting and other advantageous qualities.

The invention will best be understood from the following description, taken in connection with the accompanying drawing, of one illustrative product of my improved method, and of the best mode or manner known to me for practising such method, while its scope will be more particularly pointed out in the appended claims.

The accompanying drawing shows one improved product embodying my invention.

Referring to the drawing, the sheet of material 1 therein illustrated is given merely as an example of any textile or other fibrous material, such as leather for example, to which it is desired to apply another wear-receiving sheet 2.

The outer or wear-receiving sheet will preferably be treated to render the same water-repellent and highly wear-resisting, and is then so applied to the other sheet 1 as to constitute a homogeneous, wear-resisting layer.

Any suitable material may be taken as a basis for the wear-receiving sheet 2, but preferably this will be of some fibrous material such as a textile fabric or leather. Certain materials, such as ordinary grades of chrome-tanned leather for example, which, owing to their porosity, lack of body and tendency to stretch when moist are not adapted for certain uses where wear-resisting or other special qualities are re-

quired, will, when treated by my process, become suitable for such uses.

The sheet material 2 which is to constitute the wear-receiving sheet or member is preferably treated with a cement-like substance consisting of or including a cellulose derivative in solution and containing a quantity of non-oxidizing oil. This treatment is carried out in such a manner as to impregnate the material throughout with the oil-containing cement. This cement-like substance, containing a cellulose derivative and a non-oxidizing oil, will hereinafter be referred to briefly as the cement.

The materials composing the cement and the proportions in which they are mixed may be varied within wide limits. A suitable cement, for example, may be prepared by dissolving some cellulose derivative, a soluble nitrocellulose for example, in a suitable solvent, which may be acetone and alcohol in equal parts; if, for illustration, soluble nitro-cellulose and acetone and alcohol are used, one pound of soluble nitro-cellulose to one gallon of solvent may be employed with good results. To this is added a substantial amount of some non-oxidizing or non-drying oil, preferably a vegetable oil. This, for example, may be castor oil in the proportion of eight ounces to one pound of soluble nitro-cellulose.

The preferred method of impregnation is by immersing the material in a bath composed of the cement. For illustration, a bath may be prepared of sufficient volume and proportion to the mass of the material to be treated to maintain the material immersed for the required time thoroughly to impregnate it without impairing the fluidity of the bath or effectiveness of the treatment. The tank or other receptacle employed for the bath is closed to prevent any substantial evaporation of the solvent during the treatment of the material and is also provided with suitably controlled heating means so as to maintain the bath at a suitable temperature.

The temperature of the bath is preferably maintained at a point above the normal temperature of the air but below that which would rapidly evaporate the solvent or impair the material to be treated. In the treatment of leather with a cement constituted as described and containing the stated amount of castor oil, the temperature should

be preferably less than 150° F. Good results are obtained with temperatures varying from 125° to 130° F.

Porous materials such as leather usually hold absorbed more or less hygroscopic moisture. To facilitate the impregnation of the material with cement, it is preferable to remove substantially all water and hygroscopic moisture from the material before its treatment. This may be accomplished in any suitable or desirable manner, but, in the case of leather, a simple method is to expose the material to a suitable drying temperature for a period long enough to drive out the moisture. The time and temperature required will differ for different materials and for different masses of the same material. In the case of leather, for example, the leather may be hung or spread over night in a drying room or a drying oven at a temperature of from 120° to 150° F. In the case of some textile fabrics or thin sheet material, the material may be prepared for immersion by passing the same slowly through a drying room or drying apparatus.

Preferably also the material should be handled and the treatment carried out in a room where the air has a low humidity, so that in passing from the drying operation to the immersion, the material may have no opportunity to absorb or collect any substantial or detrimental amount of moisture.

By expelling substantially all the moisture in the leather or other material, and immersing it while in a dry state, the permeation or impregnation of the material is facilitated and it is possible to impregnate the entire mass with the cement.

With the material dried as described, it may be immediately plunged into the bath and there maintained immersed in the presence of heat for a long enough period thoroughly to impregnate it with the cement.

The period during which the immersion may be profitably continued will vary with the material and its thickness. For sole or similar leather, for example, several minutes to several hours may be required, according to thickness. In the case of some thin, permeable material, a few minutes will sometimes be sufficient. The immersion is continued for an appreciable period, sufficiently prolonged to impregnate the material throughout. In the presence of heat and immersed in the solution, the material becomes thoroughly impregnated with the cement.

The material treated by this method will be thoroughly impregnated throughout as distinguished from a mere surface coating or a coating which has a mere anchorage or impregnation of limited depth. Leather thus treated acquires the property of repelling water, has great durability and density and a high degree of flexibility.

Furthermore, the water-repellent properties and flexibility are long continuing which I attribute to the fact that the oil which is sealed into the fibers or particles by the cement cannot be washed out by exposure to moisture. When ordinary leather becomes wet and is thereafter dried by exposure to heat, it loses its softness and flexibility, becomes dry and hard and cracks readily. This is largely due to the fact that the oil, soap or grease contained in the leather has been in part washed out by the wetting of the leather and in part driven out by the subsequent application of heat for drying the leather. Leather treated by my present method and which has become damp can be readily dried by the application of heat without becoming hard or stiff and without losing its flexibility and water-repellent properties, which I also attribute to the fact that the oil is sealed into the individual fibers or particles by the cement and cannot be driven out by the heat used to dry the leather.

It will thus be seen that leather treated by my process appears to have an oil-flex property which is substantially permanent while the oil commingled with the cement throughout the body gives it a high degree of permanent flexibility and water-repellent property.

After removing the material from the bath, it is dried, the effect of this is apparently to unite the fibers or particles into a homogeneous mass, leaving the oil sealed in the particles or fibers and protected by the cement, which as I believe, incases them and binds them together throughout.

The impregnated sheet material need not necessarily be absolutely dry but the drying should be sufficient to set the cement at or near the surface, and it is then ready to be applied to other material, to serve, for example, as a wear-receiving member or layer in respect to the latter. This will preferably be by cementing it thereto. Where the material treated in accordance with my process is applied directly to another material, for example leather or other fibrous material which has not been so treated, that face of the latter to which my treated material is to be applied will preferably be roughened up so as to open up the fibers and permit the penetration of the cement solution used to a sufficient depth to secure a firm anchorage.

As an illustrative method of applying a fibrous material, leather for example treated by my above-described process to material, either leather or other fibrous material not so treated, the following may serve: One surface of the untreated material having been roughened as above stated the same is covered with a cement solution and a similar solution is applied to one face of the cement-impregnated material. Pro-

erably both materials should be warm and dry before application of the cement and the operation should preferably be carried out in a dry atmosphere. The cement employed for this coating is preferably a cement which contains a cellulose derivative and oil, and may be of the same nature as the cement used for impregnating the cement-impregnated material. Preferably, however, it will be heavier or more concentrated than that cement, such, for example, as might be obtained by using one half or less of the solvent contained in the cement used for impregnation. The coating thus applied to the surfaces to be united serves to fill the surfaces and to lay the nap or surface fibers. This coating is not merely anchored to the surface of the impregnated material but appears to become dissolved into and united with the homogeneous cemented mass of the material and becomes a part thereof. When the coating thus applied to the two surfaces to be united has dried, one of said surfaces is given another coating of adhesive cement, preferably the same as that used for impregnation, and while this coating of cement is still fluid, these two surfaces are applied to each other and are subjected to a suitable even pressure throughout, this pressure being preferably maintained until the cement is set. It is sometimes preferable to apply the solvent used to dissolve the cement, in place of this last coat of adhesive cement, the solvent thus applied apparently sufficing to render the previous coating of cement sufficiently soft and tacky, firmly to unite the layers. Heat applied in conjunction with pressure will conduce to the evaporation of the solvent and the setting of the cement. When the cement is set, the pressure may be removed and the resultant product allowed thoroughly to dry, when the two materials will be found to be permanently cemented to each other. The pressure may be applied in any suitable manner or any suitable means, as for example by subjecting the two superposed layers to direct pressure between heated presser members, such as flat plates, or between presser rolls. But the direct pressure between two flat plates in a stationary press, so constructed that the plates will exert a substantially uniform continued pressure simultaneously on all parts of the material, or a considerable area thereof, for a more or less prolonged interval, or until the cement is set, will in general be found more satisfactory. The pressure as applied will preferably be yielding; it serves to condense and compact the cement-impregnated fibers of the material.

Instead of uniting a cement-impregnated material with one not cement-impregnated, two cement-impregnated materials may be united by following the same mode of pro-

cedure above described, excepting that in such case, neither of the surfaces to be united will be roughened before applying thereto the preliminary cement coatings.

In all cases both materials to be united will preferably be warm and dry before the adhesive coat of cement for uniting them is applied, and as already stated the operation will preferably be carried out in a dry atmosphere.

It will be apparent that any number of pieces or sheets of material may be united as described, all of said pieces or sheets being cement-impregnated or one or more being cement-impregnated sheets or pieces, and one or more not. It will also be apparent that the alternative arrangement of the sheets or layers of material may vary as best suited to the purpose for which the resultant product is to be used, the cement-impregnated pieces or sheets and those not impregnated alternating either regularly or irregularly. Thus, where more than two pieces or sheets or layers of material are united, one or more that are not cement-impregnated may be embraced between two or more cement-impregnated ones, or vice versa, or two or more nonimpregnated pieces or sheets or layers may be provided with a single outer impregnated piece, layer or sheet as a wear-receiving member, for example.

It will also be apparent that where more than two layers of pieces of material are united in accordance with my process, they may be united singly, or simultaneously in any numbers desired, it being borne in mind that where an impregnated piece is united to one that is not impregnated, as also where two unimpregnated pieces are united directly, the surface or surfaces of the unimpregnated piece or pieces to which the layer of cement is applied should preferably first be roughened.

The cement layer 3 by which the cement-impregnated pieces or sheets of material are united appears to unite with the cement which permeates said pieces or sheets and forms therewith a homogeneous body. In the same manner the cement that unites a cement-impregnated piece or sheet of material to one that is not so impregnated appears to unite so intimately with the fibers of the non-impregnated piece or sheet as well as with the cement which permeates the cement-impregnated piece or sheet as to form with both of these a homogeneous body. The adhesive layer of cement also acquires the same flexibility and water-repellent characteristics as the impregnated sheet material, so that it becomes one with the material that it unites, with no opportunity or tendency for separation thereat or therefrom, and such layer bends and flexes freely in unison with the pieces or sheets of

material that it unites, so that there appears to be an absence of wear-producing friction between said pieces. The pieces of material and the cement by which they are united and permeated appear to become one homogeneous mass that flexes as a single piece. The adhesive layer between the pieces or sheets renders the resultant product water-proof.

Certain fibrous materials, such as certain kinds of leather, chrome-tanned or other upper leather, for example, which lack resiliency and have a tendency to stretch, become unstretchable and gain resiliency when treated by my process, which is a distinct advantage in the case of many uses to which my product may be applied. It will thus be seen that by my process, greater durability, toughness, compactness may be imparted to leather or similar fibrous materials, than that possessed thereby before treatment. Furthermore, the leather or other fibrous material produced by this process is cement and oil-impregnated and characterized throughout by a fibrous, cellular structure, the size and number of the air cells depending in part on the extent to which the condensing process has been carried out, the process thus rendering the material substantially and permanently water-repellent, while imparting thereto some degree of porosity, so that it possesses an advantage over material of other non-porous, water-repellent or water-proof substances, such for example as rubber. Apparently the fibers become incased with the cement after the material has been immersed, without necessarily wholly filling the interstices between the fibers or wholly expelling the air from within the same.

It will thus be seen that by my process, durability, toughness, compactness and water-repellent qualities may be imparted to cheap or inferior grades of leather so as to make them available for uses and purposes not heretofore possible, and as equal or better substitutes for leather of more expensive grades. Thus, in the case of chrome-tanned leather for example, the normally porous and relatively loose structure of the leather becomes so charged with the cement that the leather has its fibrous structure compacted into a homogeneous, cement-bound, fibrous body. The cement adds to the initial strength of the union of the fibers, but because of the oil still leaves the product flexible. The cement also adds its strength to the strength of the fibers, producing a homogeneous, compact body which can be worked in substantially the same manner as ordinary vegetable-tanned sole leather.

Leather treated by my process will buff and burnish to the same high degree as any other leather and will take quite as perfect

a finish, upon its surfaces or edges, when treated by any usual burnishing or finishing process, and will retain that finish.

It will be understood that the terms "sheet" and "sheet material" used in the specification and claims, are used in their broad and comprehensive sense, as including for example any material such as leather, felt, or any textile, woven, or other permeable material in the web or piece.

It has been found that in some cases it is preferable to subject the leather to a degreasing process, in order to remove therefrom any excessive or undesirable oil or grease, or soap, before treating the leather by my process. Any usual or well-known degreasing process may be employed for this purpose, such for example as immersing the leather for the required length of time in a bath of naphtha or benzine or other suitable agent. In the case of textile fabrics the best results are obtained with unsized materials.

While I have herein described one illustrative example of my improved product and the several steps by which one form of my product may be carried out, it is to be understood that my invention is not limited to the exact details specified or any of them, but that these may be varied within wide limits without exceeding the true scope of my invention which is definitely set forth by the claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The method of applying a sheet of leather or other permeable or fibrous material to another sheet of material, which is characterized by drying said sheets; impregnating one throughout with a cement containing a cellulose derivative and a non-oxidizing oil, by immersing it in a heated bath containing said cement in solution; applying to the surfaces of said sheets, by which they are to be united, a coating of cement also containing a cellulose derivative and a non-oxidizing oil; allowing said coatings to dry; applying to one of said surfaces a coating of adhesive cement; superimposing said surfaces while this coating of cement is still tacky; and compacting and cementing said sheets together by the application of pressure.

2. The method of applying a sheet of leather or other permeable or fibrous material to another which is characterized by drying said sheets; impregnating them throughout with a cement comprising a cellulose derivative and a non-oxidizing oil, by immersing them in a heated bath containing said cement in solution; applying to one surface of said sheets a coating of cement also containing a cellulose derivative and a non-oxidizing oil; allowing said coatings to dry; applying to one of said

cement-coated surfaces a coat of adhesive cement; superimposing said surfaces while this coating is still tacky; and compacting and cementing said sheets together by the application of pressure.

3. The method of applying a sheet of leather or other permeable or fibrous material to another sheet of material, which is characterized by degreasing the sheet to be applied; drying said sheets; impregnating one throughout with a cement containing a cellulose derivative and a non-oxidizing oil, by immersing it in a heated bath containing said cement in solution; applying to the surfaces of said sheets, by which they are to be united, a coating of cement also containing a cellulose derivative and a non-oxidizing oil; allowing said coatings to dry; applying to one of said surfaces a coating of adhesive cement; superimposing said surfaces while this coating of cement is still tacky; and compacting and cementing said sheets together by the application of pressure.

4. As a new article of manufacture a sheet of leather or other material having applied thereto a water-repellent, wear-resisting member, comprising a sheet or layer of leather or other fibrous or permeable

material, impregnating throughout with a cement containing a cellulose derivative and a non-oxidizing oil and cemented to the first-named sheet by an adhesive cement.

5. As a new article of manufacture a sheet of leather or other material having applied thereto a water-repellent, wear-resisting member, comprising a sheet or layer of leather or other permeable or fibrous material, impregnated throughout with a cement containing a cellulose derivative and a non-oxidizing oil, and having its fibrous structure compacted into a cement-bound flexible body and being cemented to said first-named sheet by an adhesive cement.

6. As a new article of manufacture a sheet of leather or other material having applied thereto a water-repellent, wear-resisting member, comprising a sheet or layer of leather or other fibrous or permeable material, impregnated throughout with a cement containing a cellulose derivative and a non-oxidizing oil and cemented to the first-named sheet by an adhesive cement containing similar materials to that used to impregnate said sheet.

In testimony whereof I have signed my name to this specification.

JOSEPH J. BYERS.

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UNITED STATES PATENT OFFICE.

LAWSON B. WILSON, OF WASHINGTON, DISTRICT OF COLUMBIA.

NON-CONDUCTING PLASTIC COMPOSITION OR CEMENT KNOWN AS PLASTIC ENAMEL.

1,389,084.

Specification of Letters Patent.

Patented Aug. 30, 1921.

No Drawing.

Application filed May 7, 1920. Serial No. 379,548.

To all whom it may concern:

Be it known that I, LAWSON B. WILSON, a citizen of the United States, residing at 1203 F street northwest, in the city of Washington, in the District of Columbia, have invented a new and useful Non-Conducting Plastic Composition or Cement Known as Plastic Enamel, of which the following is a specification.

This application is a continuation in part of my application Serial Number 354,232, filed January 20, 1920.

The object of my invention is the production of a plastic non-conducting composition or cement known as plastic enamel to be applied to the surfaces of broken objects requiring repair or mending, and for use as an adhesive agent to mend or repair such useful articles as ornaments, dishes, glassware, furniture, wood-work, metals, false-teeth, shoes, rubbers, leaks in gas and water pipes, clothing, shirts, canvas fabrics, autotops and seats, build up worn threads, leaks in boats, stiffen, repair and make waterproof, canvas for use on airplanes, etc.

My composition contemplates the use of a preferably gelatinized cellulose ester or other derivative, a solvent therefor, and a phenol. As examples of the cellulose ester or other derivative I find that any ester such as the nitrate or acetate, butyrate etc., or an ether such as the ethyl ether and others as found in Lilienfeld U. S. Patent 1188376 may be used. It is to be understood that cellulose acetate and the cellulose ethers are considered to be equivalents of the nitrocellulose specified in the claims.

As solvents I may use any of the various well known solvents in this art, examples of which are acetone, alcohols, amyl acetate, fusel oil, anilin, nitrobenzol, acetic acid, various essential oils, etc., these solvents being used singly or in combination as phenols.

As phenols, I find phenol, the various cresols, naphthols, etc. to have utility in this connection.

In one exemplification of my composition I find that celluloid, acetone and phenol give a very valuable composition for general purposes. These components may be used in the following proportions:—

Celluloid.....	4 parts
Acetone.....	5 parts
Phenol.....	3 parts

volume.

I find that these proportions are well calculated to give an excellent cementing material for general use. This example is given merely to comply with the statutory requirements, whence it is to be understood that my invention in its broad aspects is not in any way limited thereby.

To secure special properties of advantage under particular circumstances I have found that softening agents, fillers, and pigments may be used.

As softening and plasticizing agents the following are found desirable: camphor, castor oil, naphthalene and its derivatives such as the chlorids, organic esters such as ethyl acetate, inorganic esters such as triphenyl phosphate, molasses, etc.

As fillers, shellac, gums and resins of various kinds, balsam, etc. or inorganic fillers such as heavy spar, calcium carbonate etc. may be used.

For the purpose of coloring the material as desired any dye or pigment, organic or inorganic may be used.

For the purpose of fixing leaks in boats, and holes in shoes or filling up depressions, etc., the composition comprising nitrocellulose, a phenol and a solvent, is poured into a bottle containing pellets of cotton of the size ranging from a one cent piece to a twenty-five cent piece. When this is done the cotton thereby becomes completely saturated with the plastic enamel and may be applied to repair a leaky boat by placing the saturated cotton tightly between the cracks and permitting it to set until hard. In order to make it more secure and permanent it is advisable to pour plastic enamel over the cotton. Good results are obtained by applying small quantities at a time, applying subsequent coats or layers after the first coat has hardened. The same method is pursued in fixing holes in shoes.

This composition of ingredients containing the aforementioned chemicals may be made in different colors by adding pigments such as aluminum, gold, carmine, lampblack, oxid of zinc, etc. By adding pigments, the viscosity of the composition is increased.

My composition is light when set; is a very efficient non-conductor of heat and cold; is impervious to water, hot or cold; adheres to any dry surface, and as a whole possesses to a high degree properties which makes a useful cement for use in households, machine shops, dental offices, and for other use.

ful commercial purposes. My composition is useful for the making of bridge work, plates, partial plates, plumpers, tightening old sets of teeth, mending cracked plates, and adding teeth to broken sets.

Attempts have been made to produce cementing compositions previously, but they have all fallen short of the admirable materials produced by me because of one of two reasons: first, because they do not use phenols, or second, because they have failed to use a gelatinized cellulose derivative. The first compositions, of course, fall short of that used by the applicant. The second appears to have failed because there was no realization of the valuable properties of a gelatinized cellulose derivative. In such form, the gelatinized cellulose is much more susceptible to chemical action, and I believe that in this form, when treated with such

materials as acetone and phenol, there is a relatively slow tendency to form condensation products. However, whatever the action may be, I find that by my composition I have been able to secure unique properties not before known in this art. Obviously by varying the proportions of the materials the viscosity of the mixture can be controlled.

I claim:

1. A nitrocellulose composition containing celluloid, four parts; acetone, five parts; phenol, three parts, all by volume.

2. A cementing composition comprising the following:—

Nitrocellulose	4 parts
Acetone	5 parts
Phenol	3 parts

all by volume.

L. B. WILSON.

Reissued Nov. 29, 1927.

Re. 16,803

UNITED STATES PATENT OFFICE.

EDMUND M. FLAHERTY, OF PARLIN, NEW JERSEY, ASSIGNOR TO E. I. DU PONT DE NEMOURS & COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE.

LOW-VISCOSITY LACQUER AND FILM PRODUCED THEREFROM.

No Drawing. Original No. 1,629,999, dated May 24, 1927, Serial No. 471,931, filed May 23, 1921. Application for reissue filed September 19, 1927. Serial No. 220,623.

This invention relates to low viscosity lacquers and films produced therefrom, and more particularly to lacquers made from cellulose esters or nitrates having a greatly reduced viscosity and containing resins or oils that will impart such qualities to the lacquers that, upon drying in two or three coats, films will result that will be hard, durable, tough, and adhesive, together with other valuable properties.

It is an ultimate object of my invention to provide a film whose principal constituent will be a cellulose nitrate, which film will possess the characteristics of hardness, durability, toughness, transparency, freedom from acidity, lustre, and capability of adhesion to a surface to be coated; and which, will at the same time be built up of only two or three layers or coats. A further object in this connection is to utilize cellulose nitrates which have been greatly reduced in viscosity, but which have not been reduced to the point that the nitrogen content is degraded and the transparency and solubility of the cellulose nitrate impaired. A further object is to prepare lacquer and enamel compositions that will, upon drying, provide a film as aforesaid possessing a continuous unbroken appearance. Further objects of the invention will appear as the following description proceeds.

According to my invention pyroxylin solutions, and particularly lacquers, having an abnormally high nitrocellulose content in conjunction with a suitably low viscosity are produced by subjecting pyroxylin mixtures of the character hereinafter described, for a prolonged period, say from one to three weeks, preferably at ordinary room temperature, to the action of a metal salt of a weak acid, for example an alkali-forming metal acetate. The discovery of the action of salts of this kind on the viscosity of pyroxylin solutions is described in the patent of Earle C. Pitman No. 1,636,319, and the application of this discovery to the reduction of viscosity of pyroxylin solutions is claimed broadly therein. By a particular application of this discovery to high percentage pyroxylin solutions, I have found it practicable to produce solutions, such as

lacquers and colored enamels, of such a high pyroxylin content that they will deposit in two coats a film as heavy and satisfactory as the ordinary solutions do in four coats or more.

My invention may be illustrated in detail by the following examples:

I. I first make up a solution of from 25 to 30% pyroxylin in suitable solvents. A typical pyroxylin base solution for this purpose may be made according to the following formula:

	Parts.
Amyl acetate	11
Amyl alcohol	5
Acetone	35
Toluene	14
Denatured alcohol	5
Pyroxylin	28

To this mixture is added .56 part by weight of crystalline sodium acetate preferably dissolved in methyl alcohol. The amount of sodium acetate added may with advantage be from about 0.1 to 3% of the weight of pyroxylin in the solution; I preferably use 2%.

The resulting mixture is allowed to stand several weeks in a warm room and at the end of this time the viscosity is found to have dropped to a very low point, too low even for most purposes. I then add a slight amount of heavy viscosity pyroxylin which brings the solution viscosity up to a suitable working point where it stays indefinitely, there being no further action of the sodium acetate. To the solution containing a very high percentage of pyroxylin I now add suitable gums, oils and colors to impart extra adhesiveness, flexibility and shade as desired. Thus, after the viscosity has been reduced to a minimum and brought back to a suitable point, a lacquer can then be prepared by making a mixture containing 56% of this base solution, 9% of castor oil and 35% of a 50% gum solution in suitable solvents. This gum may be dammar, shellac or any of the other common gums used in lacquers. Dammar may first be dissolved in a mixture of toluene and benzene. Shellac may be used in the form of its solution in alcohol. Instead of castor oil, various other

vegetable oils, such as blown cotton-seed oil, may be added to impart flexibility to the coating.

In a similar way a colored enamel can be made from the original base solution by the addition of pigments ground in oil.

11. Instead of preparing the base solution of high percentage pyroxylin and correct viscosity in two steps, I may prepare it in one step by mixing all the pyroxylin with the solvent at the start, adding about 2%, based on the weight of pyroxylin, of sodium acetate, and allowing to stand, until the reduction in viscosity has progressed to the desired extent. The amount of pyroxylin added in this alternative procedure may be such, for example, that the resulting mixture will contain from about 30 to 40% of pyroxylin. After adding the sodium acetate the mixture is preferably allowed to stand at room temperature for about three weeks. Where less than 2% of sodium acetate is used, a longer time will be required.

By following the procedure set forth in the above examples a 25 to 40% pyroxylin solution may be obtained having a viscosity below 25,000 centipoises, as determined in the Stormer viscosimeter, at 28° C., 25,000 centipoises being practically the upper limit for any commercial solution which is to be used for coating without thinning. A centipoise is a c. g. s. unit of viscosity, water being about 1 centipoise at 20.2° C. Such solutions will, as a rule, be considerably diluted with solvents before being used in spraying or brushing surfaces to be coated.

In place of sodium acetate various other substances may be used as viscosity-reducers, either singly or two or more together. The alkali-metal formates and acetates are especially useful, and the alkaline earth metal salts, as well as the cadmium, cobalt, and zinc salts, of these same acids have a marked effect on the viscosity of pyroxylin solutions. In general, of the salts of organic acids, the water-soluble salts of the lower monobasic aliphatic acids appear to act as the best viscosity-reducers. Salts of some inorganic acids also exhibit this property, as for example the alkali-metal borates, iodides, sulphocyanates, etc.

The pyroxylin solutions coming within the purview of my invention are, of course, not confined to the particular solvent mixture given in the above examples. Thus instead of amyl acetate and amyl alcohol, I may use butyl acetate and butyl alcohol, respectively; and in place of toluene, the other benzenoid hydrocarbons such as benzene and xylene may be used. In fact any of the well-known solvent mixtures may be substituted for the one mentioned in the above examples without departing from my invention, said mixtures usually comprising a diluent such as benzene.

The maximum pyroxylin content of pyroxylin solutions which have heretofore been of practical use for coating purposes, has been about 15%, whereas the solutions made according to my invention will contain as a rule, if undiluted, more than 20% of pyroxylin, and in many cases between 25 and 40%. The above figures of 15% and 20% have particular reference to pyroxylin which has been dissolved in a mixture of solvents instead of in a single solvent. Such solutions may, of course, be diluted with solvents for spraying or brushing purposes.

The new lacquer is differentiated from cellulose nitrate lacquers heretofore known in that it contains at least 25% and sometimes from 50 to 150% more cellulose nitrate at a given viscosity than does a corresponding lacquer of the same viscosity and having the maximum content of cellulose nitrate which has not been subject to the above subscribed treatment with sodium acetate or a similarly functioning agent.

My new lacquer may be differentiated from prior lacquers by stating that the viscosity-characteristic of the nitrocellulose in the new lacquer is substantially lower than that of the nitro-cellulose contained in the lacquers heretofore known. This distinctive feature of the new lacquer makes it possible to identify the same irrespective of the extent to which the new lacquer is modified or thinned by the addition of gums, volatile solvents or diluents, etc. The above-mentioned viscosity-characteristic of the pyroxylin component of the new lacquer may advantageously be defined in terms of the viscosity that it imparts to some convenient solution taken as a standard when measured by a standard method. I have found it desirable to express this inherent viscosity-characteristic in terms of the viscosity possessed by a 16 ounce ethyl acetate solution of the reduced viscosity nitrocellulose when measured by the Stormer viscometer, at 28° C. Thus, a 25% pyroxylin solution having the solvent composition set forth in Example I above, and having a viscosity of 25,000 centipoises, as determined in the Stormer viscometer at 28° C., using a 500 g. weight, contains nitrocellulose which, when dissolved in toto in pure ethyl acetate (over 99.5%) to form a 16 oz. solution, imparts to said ethyl acetate solution a viscosity of about 1200 centipoises when tested in said viscometer at 28° C. In the preferred embodiment the lacquers and base solutions constituting my invention are consequently clearly differentiated from the lacquers of the prior art by containing, for their pyroxylin content, nitrocellulose whose inherent viscosity-characteristic is such that when said nitrocellulose is dissolved in pure ethyl acetate to form a 16 oz. solution, said solution possesses a viscosity of less than 1200 centipoises when

tested in the Stormer viscometer at 28° C. (using a 500 g. weight), and generally the said lacquers and solutions are distinguished over the prior art by containing a nitrocellulose whose inherent viscosity characteristic is such that at above 20% concentration in a mixed solvent of the character described in Example I, it will provide a solution below 25,000 centipoises in viscosity.

I use the expression (1) "16 oz. solution" and (2) "16 oz. ethyl acetate solution" in the sense customary in the art of pyroxylin solutions, that is, to mean (1) 16 ounces of nitro-cellulose dissolved in 1 gallon of solvent, and (2) 16 ounces of nitrocellulose dissolved in 1 gallon of ethyl acetate, respectively, at ordinary room temperature (22° C.).

When the new solutions hereinbefore described are used to coat various kinds of surfaces, particularly rigid metal or wood surfaces, to provide films thereon, either by spraying, brushing or dipping, the resulting films will be hard, durable, lustrous, transparent, tough, and continuous, and will adhere to the underlying surface. These films may be made of proper and sufficient thickness by the application of two or three coats, whereas in former practice where high viscosity nitrocellulose was used, a much larger number of coats had to be applied to obtain a film of sufficient thickness. My new films are particularly characterized by their toughness, i. e., the absence of any brittleness, this result being achieved by the admixture of the ingredients of the lacquer or enamel, with nitrocellulose, whose viscosity has been reduced by means of sodium acetate, or its equivalent in function, whereby the nitrogen content is not seriously reduced and correspondingly the resulting solubility of the nitrocellulose and toughness of the film remains substantially unimpaired. The use of the sodium acetate, which has an alkaline reaction, and the absence of acidic products in the low viscosity solutions or lacquers, permits of the addition of basic pigments without liability of incurring undesirable reactions.

It will, therefore, be apparent that I have provided lacquers and enamels containing a much higher proportion of nitrocellulose for a given viscosity than was hitherto possible, without in any way impairing the aforesaid characteristics of the film to be prepared, while at the same time making possible the easy application of these lacquers and enamels upon surfaces to be coated. As a result, films of the aforesaid excellent characteristics may be prepared, by the application of only two or three coats of my new lacquers or enamels, whereas in the old art it was necessary to put on many more coats in order to build up a film of proper and suitable thickness, this latter difficulty having been

due to the necessary low nitrocellulose content of the prior art solutions at a working viscosity.

As many apparently widely different embodiments of this invention may be made without departing from the spirit thereof, it is to be understood that I do not limit myself to the foregoing examples, except as indicated in the appended claims.

I claim:

1. A pyroxylin coating composition comprising nitrocellulose, a softener therefor, and a volatile nitrocellulose-solvent, the viscosity-characteristic of the nitrocellulose, expressed as the viscosity of a 16 oz. solution thereof in C. P. ethyl acetate, being less than 1200 centipoises when measured by the Stormer viscometer at 28° C.
2. A pyroxylin coating composition comprising nitrocellulose, a softener therefor; a gum, and a volatile solvent for the three first mentioned ingredients, said nitrocellulose, when 16 ounces thereof is dissolved in 1 gallon of pure ethyl acetate, yielding a 16 oz. solution whose viscosity is less than 1200 centipoises when measured by the Stormer viscometer at 28° C.
3. A pyroxylin coating composition comprising nitrocellulose, a volatile nitrocellulose-solvent, a softener for the nitrocellulose, a gum, and a pigment, said nitrocellulose, when 16 ounces thereof is dissolved in 1 gallon of pure ethyl acetate, yielding a 16 oz. solution whose viscosity is less than 1200 centipoises when measured by the Stormer viscometer at 28° C.
4. A coating composition comprising cellulose nitrate having an inherent viscosity characteristic such that at 25% concentration in a mixed solvent of the composition hereinbefore described it will provide a solution below 25000 centipoises in viscosity, and comprising also a resin and a solvent.
5. A composition comprising cellulose nitrate having a viscosity, as determined upon a 16 oz. solution of ethyl acetate with the Stormer viscometer at 28° C., of less than 1200 centipoises, and comprising also a resin and a solvent.
6. A coating composition comprising cellulose nitrate having an inherent viscosity characteristic such that at 25% concentration in a mixed solvent of the composition hereinbefore described it will provide a solution below 25000 centipoises in viscosity, and comprising also a resin, an oil, and a solvent.
7. A composition comprising cellulose nitrate having a viscosity, as determined upon a 16 oz. solution of ethyl acetate with the Stormer viscometer at 28° C., of less than 1200 centipoises, and comprising also a resin, and solvents to bring the viscosity of the composition below 25000 centipoises.
8. An article covered with a hard, dura-

ble, tough, and adhesive film formed from a composition comprising a cellulose nitrate having an inherent viscosity characteristic such that at 25% concentration in a mixed solvent of the composition hereinbefore described it will provide a solution below 25000 centipoises in viscosity, and comprising also a resin.

9. A composition comprising cellulose nitrate having a viscosity, as determined upon a 16 oz. solution of ethyl acetate with the Stormer viscometer at 28° C., of less than 1200 centipoises, and comprising also a solvent and a resin, said composition being adapted upon drying of not over three coats to form a hard, durable, tough, and adhesive film.

10. A composition comprising cellulose nitrate having a viscosity, as determined upon a 16 oz. solution of ethyl acetate with the Stormer viscometer at 28° C., of less than 1200 centipoises, and comprising also a solvent, a resin, and a basic pigment, said composition being non-acidic whereby no reaction occurs with said pigment, and said composition being adapted upon drying of not over three coats, to form a hard, durable, tough, and adhesive film.

11. An article covered with a hard, durable, tough, and adhesive film formed from a composition comprising a cellulose nitrate having a viscosity, as determined upon a 16 oz. solution of ethyl acetate with the Stormer viscometer at 28° C., of less than 1200 centipoises, and comprising also a resin and a solvent.

12. An article covered with a hard, durable, tough, and adhesive film formed from a composition comprising a cellulose nitrate having a viscosity, as determined upon a 16 oz. solution of ethyl acetate with the Stormer viscometer at 28° C., of less than 1200 centipoises, and comprising also a resin, an oil, and a solvent.

13. A composition comprising cellulose

nitrate having an inherent viscosity characteristic such that at above 20% concentration in mixed solvent of the composition hereinbefore described it will provide a solution below 25000 centipoises in viscosity, and comprising also a resin and a solvent.

14. A composition comprising cellulose nitrate having an inherent viscosity characteristic such that at above 20% concentration in mixed solvent of the composition hereinbefore described it will provide a solution below 25000 centipoises in viscosity and comprising also a resin and solvents to bring the viscosity of the total composition below 25000 centipoises.

15. An article covered with a hard, durable, tough, non-shrinking and adhesive film formed from a composition comprising a cellulose nitrate having a viscosity characteristic such that at above 20% concentration in mixed solvent of the composition hereinbefore described it will provide a solution below 25000 centipoises in viscosity, and comprising also a resin.

16. An article coated with a hard, durable, tough, and adhesive film formed from a composition containing a resin, a softener, and a cellulose nitrate having a low viscosity characteristic such that at above 20% concentration in mixed solvent of the composition hereinbefore described it is capable of producing a solution below 25000 centipoises in viscosity.

17. A rigid article coated with a hard, durable, tough, and adhesive colored enamel formed from a composition containing a resin and a cellulose nitrate having an inherent viscosity characteristic such that at 25% concentration in a mixed solvent of the composition described in Example I the latter will have a viscosity below 25000 centipoises.

In testimony whereof, I affix my signature.

EDMUND M. FLAHERTY.

DISCLAIMER

Re. No. 16,803.—*Edmund M. Flaherty*, Parlin, N. J. LOW-VISCOSITY LACQUER AND FILM PRODUCED THEREFROM. Patent dated November 29, 1927. Disclaimer filed May 26, 1932, by the assignee, *E. I. du Pont de Nemours & Company*.

Hereby enters this disclaimer to that part of said specification and claims which is in the following words: to wit: "and generally the said lacquers and solutions are distinguished over the prior art by containing a nitrocellulose whose inherent viscosity characteristic is such that at above 20% concentration in a mixed solvent of the character described in Example I, it will provide a solution below 25,000 centipoises in viscosity". (P. 3, 11.2-9.)

"13. A composition comprising cellulose nitrate having an inherent viscosity characteristic such that at above 20% concentration in mixed solvent of the composition hereinbefore described it will provide a solution below 25,000 centipoises in viscosity, and comprising also a resin and a solvent.

"14. A composition comprising cellulose nitrate having an inherent viscosity characteristic such that at above 20% concentration in mixed solvent of the composition hereinbefore described it will provide a solution below 25,000 centipoises in viscosity and comprising also a resin and solvent to bring the viscosity of the total composition below 25,000 centipoises.

"15. An article covered with a hard, durable, tough, nonshrinking, and adhesive film formed from a composition comprising a cellulose nitrate having a viscosity characteristic such that at above 20% concentration in mixed solvent of the composition hereinbefore described it will provide a solution below 25,000 centipoises in viscosity, and comprising also a resin.

"16. An article coated with a hard, durable, tough, and adhesive film formed from a composition containing a resin, a softener, and a cellulose nitrate having a low viscosity characteristic such that at above 20% concentration in mixed solvent of the composition hereinbefore described it is capable of producing a solution below 25,000 centipoises in viscosity."

[*Official Gazette June 14, 1932.*]

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Patented Sept. 15, 1925.

1046
1,554,033

UNITED STATES PATENT OFFICE.

EBENEZER EMMET REID, OF BALTIMORE, MARYLAND, ASSIGNOR TO E. I. DU PONT DE NEMOURS & COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE.

CELLULOSIC COMPOSITION.

No Drawing.

Application filed February 4, 1921. Serial No. 449,474.

To all whom it may concern:

Be it known that I, EBENEZER EMMET REID, a citizen of the United States, and a resident of Baltimore, in the State of Maryland, have invented certain new and useful Cellulosic Compositions, of which the following is a specification.

This invention relates to cellulosic compositions containing as an essential constituent a neutral butyl phthalate, and has reference more particularly to cellulose nitrate plastics containing dibutyl phthalate.

In the practical application of dissolved cellulose and soluble cellulose compounds, including cellulose esters, to the various arts and manufactures, such as the production of films, varnishes, filaments, plastic masses, etc., it is customary to blend or mix or otherwise add to the cellulose ester or to its solution, certain non-cellulosic materials commonly termed softeners, camphor substitutes or the like, such additions being made for the purpose of imparting to the cellulose or its compounds some desired properties, such as non-inflammability, plasticity under heat, flexibility, etc. These softeners, camphor substitutes and the like, which I shall hereinafter for convenience designate as "modifiers," function in many different ways in cellulosic combinations; and the properties which they impart to the product depend upon and are determined by both the physical and the chemical properties of the particular modifier used. For example, if a modifier is non-inflammable, it will impart this property to the cellulose to a degree which is of course dependent upon the character of the modifier and the proportion added; if the modifier is relatively non-volatile its effect will be more permanent than that of a more volatile modifier; if the modifier is a solvent under suitable conditions for the cellulose material, it will as a rule impart greater flexibility than if it is a non-solvent; and particularly, modifiers which are liquid at normal temperatures will, other things being equal, impart greater flexibility than those which are solid at normal temperatures.

I have found that the neutral esters of phthalic acid (that is, ortho-phthalic acid) in which at least one of the alcohol radicals is a butyl group are more suitable as modifiers than most substances which have heretofore been proposed for this purpose.

By the expression "neutral butyl phthalates" I include not only a dibutyl phthalate but also the mixed esters such as methyl butyl, ethyl butyl, and propyl butyl, phthalates. I prefer to use esters of the kind above indicated in which the butyl radical is that of normal butyl alcohol rather than of isobutyl alcohol, and specifically, di (normal) butyl phthalate.

The procedure which may be followed to produce the above-mentioned butyl phthalic acid esters may be illustrated by the following examples:—

From phthalic anhydride.

Three parts by weight of phthalic anhydride are added to $3\frac{1}{2}$ parts of normal butyl alcohol (B. P. $115-117^{\circ}$ C.) and the mixture heated to 117° C. for eight hours. This completes the first reaction with the formation of mono-butyl phthalate which remains dissolved in the excess alcohol. Three per cent by weight of dry hydrogen chloride is dissolved in the mixture, which is heated to 117° for eight hours. The second reaction is accompanied by the separation of a layer of water. This is separated and the heating continued for an additional eight hours. The resulting liquid product is first washed with water to remove the hydrochloric acid; then with strong sodium carbonate to remove the mono-butyl phthalate and any free phthalic acid; and finally with water several times until neutral. The dibutyl phthalate is purified from alcohol and dried by passing a current of air through the liquid heated to 160° C. The product is a liquid, odorless, slightly yellow in color and may be obtained water white by distilling under diminished pressure. The yield is 83.6% of the theoretical. Boiling point under 29 mm. pressure is 210° C.

From phthalic acid.

The use of phthalic acid requires a catalyst for both stages of the reaction. One part by weight of phthalic acid is mixed with 2.5 parts of normal butyl alcohol (B. P. $115-117^{\circ}$ C.). Three per cent by weight of dry hydrogen chloride is dissolved in the mixture, which is heated to 117° for twenty-four hours. The water which forms as a lower layer is drawn off from time to time and more hydrogen chloride added toward the latter part of the

heating. The product is washed and purified in the same manner as described above. The yield from phthalic acid is 79.2% of the theoretical.

5 *Mono-butyl phthalate.*

Mono-butyl phthalate is obtained as a by-product from either of the above methods and is recovered by acidifying the sodium carbonate wash waters. This can be utilized in the preparation of di-butyl phthalate or for the purpose of making mixed esters. It is a white crystalline solid melting at 73-74° C., soluble in all the usual organic solvents and in alkali. Recrystallized from acetone or alcohol it is obtained in large rhombic plates.

The cellulosic compositions, and particularly the cellulose esters such as the acetate and nitrate, containing a butyl phthalic acid ester as a modifier have a practical application in many arts as, for example, in artificial leather, celluloid, lacquers, photographic film, etc.

25 In preparing the new cellulosic compositions, the butyl phthalic acid ester may be used in various proportions depending upon the result sought, as will be readily understood. As one illustrative example of the practice of the invention, I may incorporate thirty parts by weight of dibutyl phthalate with 100 parts of cellulose nitrate.

For producing flexible films, a suitable solution may be prepared by dissolving cellulose nitrate and dibutyl phthalate in the ordinary solvents such as ethyl acetate, benzene, methyl or ethyl alcohol and acetone, etc. Pigments and colors may be incorporated, and also, in the production of plastics, a suitable amount of a stabilizer, such as urea.

The properties of di (normal) butyl phthalate (and in general of the neutral

butyl phthalates above described) which make it especially valuable in pyroxylin compositions may be listed as follows:

1. It is a solvent for pyroxylin.
2. It is a liquid at ordinary temperatures and does not crystallize when cooled very much below room temperature, for example to -17° C.
3. It has a very low volatility at ordinary temperatures.
4. It undergoes practically no change on storage either in bulk or in a pyroxylin film.
5. It is colorless.

The neutral butyl phthalates are new substances and are claimed as such in my co-pending application Ser. No. 428,018 filed December 3, 1920.

I claim:—

1. A composition comprising essentially a cellulose ester and, as a modifier therefor, a neutral butyl phthalate.
2. A composition comprising essentially a cellulose ester and, as a modifier therefor, di-butyl phthalate.
3. A composition containing a cellulose ester and a neutral (normal) butyl phthalate.
4. A composition containing a cellulose ester and a di (normal) butyl phthalate.
5. A composition containing cellulose nitrate and a neutral butyl phthalate.
6. A composition containing cellulose nitrate and a neutral normal-butyl phthalate.
7. A composition containing cellulose nitrate and di (normal) butyl phthalate.
8. A film comprising a cellulose ester in admixture with a neutral butyl phthalate.
9. A film comprising a cellulose ester in admixture with di (normal) butyl phthalate.

In testimony whereof I affix my signature.

EBENEZER EMMET REID.

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PAGE

1048

E. C. & V. E. SMITH.
SEALING MATERIAL FOR BOTTLES AND THE LIKE.
APPLICATION FILED SEPT. 27, 1909.

983,319.

Patented Feb. 7, 1911.

Fig. 1.



Fig. 2.



Witnesses:
Wm. A. Courtland
Henry C. Workman

Eugene C. Smith
Victor E. Smith
Inventors
By their Attorney *Frank W. B. B.*

UNITED STATES PATENT OFFICE.

EUGENE C. SMITH AND VICTOR E. SMITH, OF PROVIDENCE, RHODE ISLAND.

SEALING MATERIAL FOR BOTTLES AND THE LIKE.

983,319.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed September 27, 1909. Serial No. 519,852.

To all whom it may concern:

Be it known that we, EUGENE C. SMITH and VICTOR E. SMITH, both citizens of the United States, and residents of the city and county of Providence, in the State of Rhode Island, have invented new and useful Improvements in Sealing Materials for Bottles and the Like; and in order that those skilled in the art may understand and practice our invention we give the following specification.

We have illustrated our invention in the accompanying drawings, of which—

Figure 1 is a cross section view of the sealing material, and Fig. 2 is a similar view of a metallic cap such as is used for sealing bottles having a sealing disk constructed in accordance with our invention inserted therein.

Our invention relates to sealing material for hermetically closing bottles and similar vessels to preserve their contents, and it has for its object to provide a sealing material for the purposes stated which shall possess advantages over the materials at present generally known and commonly used.

Our invention is more particularly intended to provide an improved sealing material for use in connection with metallic caps which are crimped upon the necks of bottles, which sealing material shall be easy and inexpensive to manufacture and which shall form a perfect gas and air tight seal to prevent the contents of the bottles from deterioration, and which shall be unaffected by the conditions involved in capping, bottling and sterilization, and also unaffected by the liquids or contents inclosed in the bottles, and at the same time impart no flavor or objectionable influence to the same.

Cork has long been regarded as the most satisfactory and efficient sealing material for the purposes stated, but owing to the growing scarcity and increasing cost of the same various expedients have been proposed from time to time to meet this condition. The wide use of the metallic or crown cap while reducing the amount of cork required to form a seal compels the selection of the finest grade of cork, freest from pores, in order to produce a gas or air tight seal. This condition not only involves the expense of the best grade material, but also the expense involved in the process of selection and gives rise to considerable waste. In order to insure gas tight seals of cork

and similar material, it was found necessary to back the cork disk or lining of the cap with such material as paraffin paper or the like; but this while adding to the expense did not remedy but only mitigated the difficulty. Various materials other than cork have been proposed but these, so far as we are aware, are generally either too expensive in their production or are inferior to cork as a seal, or deteriorate with age, or do not withstand the conditions occurring in capping, bottling or sterilization, or impart a flavor or odor to the contents of the bottles, or are acted upon by such contents. When the enormous quantity of bottle seals required for use are considered, the item of expense or cost of their production becomes a leading feature for consideration, and when it is further considered that in a large proportion all the materials to be bottled consist of aerated or carbonated liquids, or liquids containing or generating gas under pressure, it will be apparent that a successful sealing material must be low in cost of production and must at the same time form such a perfect seal with the neck of the bottle that no air may enter or gas escape.

Our invention which from careful tests has been found to satisfy and fulfil the above stated conditions and requirements is carried out as follows. We take a sheet of relatively soft compressible felt or fibrous material of about one twelfth of an inch more or less in thickness. For this material we have found satisfactory a specially made compressible felt paper closely resembling blotting paper but preferably softer. This material is represented in Fig. 1 of the drawings on an exaggerated scale as to thickness by the numeral 1. On one side of this compressible fibrous material 1 we secure a sheet of thin but tough and strong fibrous paper. For this thin sheet material, we have found a good Manila paper to give satisfactory results. This thin sheet material is represented in the drawings by the numeral 3. The thin tough sheet 3 is attached to the soft compressible sheet 1 by means of an elastic glue composition, indicated at 2, of such character as will not become hard or brittle upon drying or setting. For this purpose we employ an elastic glue composition made up of glue, glycerin and saccharine material such as sugar or molasses, in about the proportions respectively as they are used in the well

known printers' roller composition. This elastic glue composition 2 is spread upon the thin sheet material 3, and a number of such sheets coated with said composition 5 may be prepared, to be used as may be necessary. When these sheets are used the glue composition is softened or melted by placing the sheets upon a steam table or hot plate or by heating them in any convenient manner. When the glue has been softened or melted in this manner the thin sheets are applied to the compressible fibrous sheets 1, pressure being applied by means of rollers or otherwise, and the two sheets are united 15 and are then laid aside to dry and set. The outer face of the thin sheet is then coated with a layer of cellulosic varnish, as indicated by numeral 4. For this material we prefer to use a flexible pyroxylin or collodion varnish or the so called celluloid varnish. This coating is applied to such thickness that the same will, when fully dried, be of about two thousandths of an inch thick. When this cellulosic coating is 25 dried, which will take but a few minutes, sealing disks of a size to snugly fit the caps may be stamped therefrom, and are ready for insertion in the caps. It will be understood that the cellulosic varnish coating*4 will in use come in contact with the edges of the mouths of the bottles.

The material produced as above described constitutes a very perfect sealing material for liquids and beverages of all kinds such 35 as are usually bottled and sealed. It forms a practically perfect seal when applied in the usual manner or with the sealing and capping machines usually employed by bottlers, being air and gas tight and successfully sealing the gas contained or generated 40 in gaseous or aerated liquids against escape. The cellulosic coating being flexible and stretchable and impervious to gases, forms a gas and air tight seal and when the 45 seal is applied by the usual bottling apparatus, it forms a perfect gas and air tight seal, the compressible fibrous backing sheet yielding to the pressure of the mouth of the bottle and the cellulose coating being flexible and stretchable, makes close contact 50 about the lips or edges of the mouth of the bottle preventing access of air to, or escape of gases from the contents of the bottle. The cellulose coating is also unaffected by 55 contact with the contents of any liquids or beverages which are customarily put up in bottles for sale and imparts no odor or flavor to such liquids or beverages. The materials employed in the manufacture of our 60 sealing material are such that the same may be produced at a cost below that of cork or of any satisfactory substitute sealing material with which we are acquainted. Our sealing material also withstands a degree

of heat as high as 250° F. or a heat which 65 is considerably higher than any degree of heat used in the sterilizing or pasteurizing processes employed in bottling.

We are aware that pyroxylin, celluloid or the like, varnish is, *per se*, old as a varnish 70 or surfacing material, but we are the first, so far as we are aware, to discover that the same possesses properties and characteristics in relation to the sealing or capping of bottles and the like, particularly in combination with other features of our invention, whereby important and useful advantages are obtained, and a sealing material produced which successfully meets the requirements and conditions of a bottle seal, and 80 we therefore claim the employment of the same in this connection broadly.

What we claim is:

1. A sealing material of the character described, comprising a body portion of compressible fibrous material and a layer or facing thereon of flexible cellulosic varnish to contact with the mouth of the vessel to be sealed.

2. A sealing material of the character described, comprising a backing of compressible fibrous material, a relatively thin paper sheet united thereto and a coating or layer of flexible cellulosic varnish on said thin paper sheet.

3. A sealing material of the character described, comprising a body portion of compressible fibrous material and a layer or facing of flexible collodion varnish to contact with the mouth of the bottle to be sealed.

4. A sealing material of the character described, comprising a backing of compressible fibrous material, a relatively thin paper sheet united thereto and a coating or layer of flexible collodion varnish on said thin paper sheet.

5. A sealing material of the character described, comprising a backing of compressible fibrous material, a relatively thin paper sheet united thereto by a flexible glue composition, and a coating or layer of flexible collodion varnish on said thin paper sheet.

6. The combination with a metallic sealing cap of a sealing disk therein, said disk comprising a body portion of compressible fibrous material having an outer layer or facing of flexible collodion varnish.

7. The combination with a metallic sealing cap of a sealing disk therein, said disk comprising a body portion of compressible fibrous material, a facing of thin paper united thereto and an outer coating of flexible collodion varnish on said paper.

EUGENE C. SMITH.
VICTOR E. SMITH.

Witnesses:

ALFRED A. SAUNDERS,
WILLIAM B. BLIFFORD.

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PAGE

July 19, 1932.

A. H. WARTH

1,867,637

CLOSURE AND INTERIOR FACING THEREFOR

Filed Dec. 23, 1930

Fig. 1.

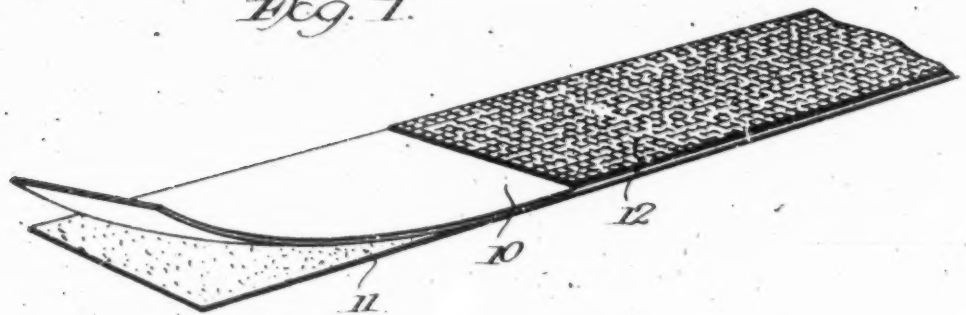


Fig. 4.

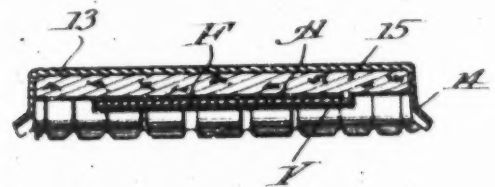


Fig. 3.

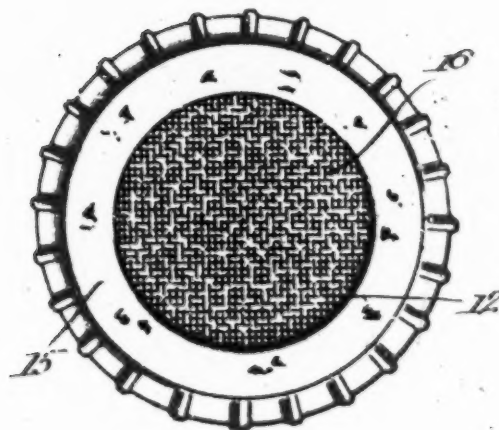


Fig. 2.

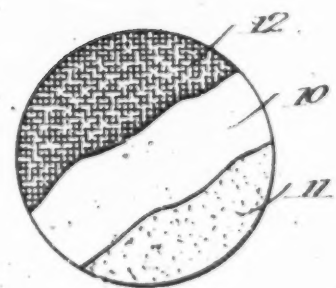
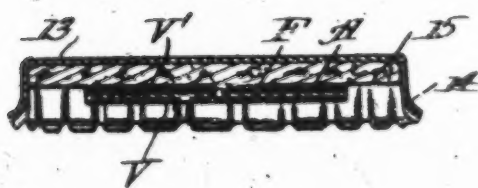


Fig. 5.



Inventor

Albin H. Warth,

By *Cushman, Bryant & Dwyer*

Attorneys

Patented July 19, 1932

1,867,637

UNITED STATES PATENT OFFICE

ALBIN H. WARTH, OF BALTIMORE, MARYLAND, ASSIGNOR TO CROWN CORK & SEAL COMPANY, INC., OF BALTIMORE, MARYLAND, A CORPORATION OF NEW YORK

CLOSURE AND INTERIOR FACING THEREFOR

Application filed December 23, 1930. Serial No. 504,409.

The present invention relates to closures, and more particularly to an improved interior facing for closures and method of producing the same.

Although the invention is applicable to closures of any type in which an interior facing may be usable, from a more specific aspect it is particularly applicable to closures of the crown type and which have a center spot for facing and protecting from container contents the liner of cushion material.

For center spots, it has been customary to employ various materials, such as aluminum foil, tin foil, and paper or other fibrous material having a gas and liquid impervious coating.

The present invention has as an object the provision of an improved facing of the metal foil type. In crown caps, metal foil has been used as a spot in caps intended for the sealing of mineral waters, soda waters, beers, and other liquids. These metal-spots are commonly made of tin foil, or aluminum foil. There are some liquids, however, with which it has not heretofore been practicable to utilize a foil facing, and the present invention seeks to provide an improved facing of metal foil which will effectively resist the action of liquids for which metal foil has been unsuitable as a cap spot or facing.

Moreover, the invention seeks to provide an improved facing which will permit the use of aluminum foil for the capping of liquids with which it has heretofore been practicable to use only tin foil. For certain highly carbonated alkaline and saline waters, the relatively more expensive tin foil spotted or faced caps have been used to the exclusion of other metal foil and of paper. Since closures, particularly those of the crown type, are sold for only a few cents a gross, a saving of only a fraction of a cent per crown for dozen crowns is of considerable importance.

Moreover, for certain liquids, for example those requiring high temperatures for sterilization, metal foil facings are unsatisfactory, particularly if the liquids contain acids such as citric acid, lactic acid, and acetic acid. When subjected to such acids, the foil be-

comes tarnished, corroded, or even dissolved if the acid is very strong. Aluminum foil tends to corrode or tarnish in the presence of fruit acids, and to be eaten away by minute amounts of alkalis, alkaline earths, and mineral salts, which are present in waters.

The present invention seeks to provide a facing of the foil type, and particularly a facing of aluminum foil, which will be resistant to such alkalis, alkaline earths, and mineral salts, and which will not be easily eaten away by fruit acids, such as are present in ginger ale and other acidulated beverages.

Another object of the invention is to provide a foil facing of distinctive appearance which will facilitate the distinguishing of aluminum and tin foil facings and of the materials when in strip form, and which will also permit the use of foil without the usual foil appearance, thereby enabling this material to be used in instances and where the employment of foil might be objectionable, for example because of the widely recognized non-resistant characteristics of foil. It will be understood that it is frequently very difficult to distinguish aluminum foil and tin foil from one another. Moreover, there is widespread objection to closures with foil facings because of the weakness of this material in the presence of acids and alkalis.

The invention will be described in connection with the manufacture of a closure of the crown type and provided with a center spot. Spot crowns are well known in the art, and are illustrated for example in the patent to McManus, No. 1,339,066, granted May 4, 1920. Although described as applied to crown caps, it will be understood that the invention is applicable to caps of other types, such as screw or lug caps, and is not limited to a cap-facing of smaller diameter than the cap.

Referring to the accompanying drawing, wherein there is shown one embodiment of the invention,

Figure 1 is a perspective view showing the laminated material used in the preferred method of manufacturing the cap.

Figure 2 is a plan view partly broken away

showing the disc formed from the material illustrated in Figure 1.

Figure 3 is an interior face view of a completed cap.

Figure 4 is a cross sectional view, and

Figure 5 is a cross sectional view of a modified form of cap.

In order to produce a cap having a facing of the desired character, it is preferred to utilize a laminated material which is made up in sheet or strip form, and from which the facing may be punched and applied to the cap for assembly in the manner illustrated and described in my Patent No. 1,788,260, granted January 6, 1931.

This material comprises an intermediate layer 10 (Fig. 1) of waterproof material, such as tin or aluminum foil. One surface of the material is coated with a layer of suitable adhesive 11. I prefer an adhesive which is waterproof and, to a certain extent, acid resistant, such as gutta percha or a mixture of gutta percha and other gum. Another adhesive which has been found satisfactory is a mixture of damar resin, turpentine rosin, bodied linseed oil, poppy-seed oil, the mixture being thinned with mineral spirits and permitted to dry after application to the foil. This adhesive, as well as one which includes gutta percha, is normally hard or firm at room temperature, and consequently the spot material can be conveniently handled in strip form, in which form it may be stored in rolls adapted to be used in the cap forming machines. Moreover, such an adhesive will become tacky upon the application of heat, and hence will unite the spot material to the cap upon the application of heat and pressure, which may be simultaneously applied, as by the punch which forms the facing discs or spots from the strip material. Since the adhesive is water-resistant and acid resistant it constitutes an additional layer which will protect the cushion material of the cap should the foil material become weakened or perforated by the alkalies, acids or alcohol in the capped liquids.

Still another adhesive which may be used is one containing as its principal constituent pitch, preferably fused pitch of a moderately hard or hard consistency having a melting point of more than 140° F. By pitch is meant the residue from the distillate of coal-tar, shale oil, petroleum, or vegetable oil. For coating purposes the pitch may be dissolved in suitable solvents such as benzol or toluol, the solvent being evaporated off in the drying of the coating. The pitch may be also combined with ceresin wax, such as 4 parts pitch, and 1 part ceresin wax, and then thinned out with benzol or toluol. The wax has a tendency to prevent certain grades of pitch being too tacky at low temperatures.

The other surface of the material is provided with a coating 12 of varnish or lacquer,

and both sides of the foil may be coated in this manner if the varnish coating is applied before the application of the adhesive. In some instances, the coating of both sides may be found to be desirable. For applying the varnish or lacquer coating the foil may be passed through a bath of the varnish or lacquer, or the coating may be applied by rollers, and thereafter it may be hardened, as by baking at a temperature of about 300° F.

Any suitable varnish may be used, but I prefer a varnish which is acid and alkali resistant. By "resistant" I mean a varnish which will resist the action of alcohol, alkalies and acids in the percentages usually present in beverages or liquids with which the caps are intended to be used. The precise acid and alkali resisting properties of the varnish or lacquer will depend, of course, upon the beverages with which the caps are intended for use, and it will be obvious, of course, to one skilled in the art of producing acid, alkali and alcohol resistant varnishes, that the characteristics of the preferred varnish indicated below may be varied to the extent desired in accordance with the particular purposes of the material.

I have found that for the capping of ordinary beverages containing alkalies and acids, and also alcohol, a varnish comprising a natural gum, such as Zanzibar, Madagascar, or esterized manila gum, together with a relatively large amount of China-wood oil will be very efficient. To make a long oil varnish of this character, I prefer to use thirty-five gallons of oil to one hundred pounds of resinous gum. In such a varnish, metallic driers and plasticizers are added in small amounts, such plasticizers as linseed oil, perilla oil, castor oil, tea seed oil, or lecithin being suitable.

In the manufacture of a foil spot, I have found it advantageous to color the varnish or lacquer, and the use of different and readily distinguishable colors, such as gold and red upon the different types of foil (tin and aluminum) will enable one to determine readily by the color the precise character of the foil. Furthermore, the provision of a colored varnish will conceal the characteristic foil appearance, and thus permit the use of foil in the manufacture of caps for which foil would not ordinarily be regarded as acceptable because of the general impression that a foil spot will not suitably resist acids and alkalies. In order to provide a golden color, for instance, a small amount of gilsonite asphaltum may be incorporated in a varnish of the character above described. The varnish may be brought to the desired consistency by the use of mineral spirits or turpentine substitute.

The foil may be coated either before or after the application of the adhesive, but necessarily preliminary to the application of the

adhesive coating when both sides of the foil are coated with varnish.

By the use of a varnish or lacquer which is resistant to acids (carbonic acid, acetic acid, tartaric acid, citric acid) and which is unaffected by alkalies, alkaline earths and mineral salts, such as sodium chloride, there is provided a foil facing which is suited to the sealing of acidulous beverages which are to be subjected to high temperatures and also to high pressures. A facing of this character is also particularly suited for the sealing of alkaline and saline waters. When coated in this manner, aluminum or other cheap foil can be substituted for tin foil, thereby effecting a substantial economy in the manufacture of the cap.

A cap provided with a spot of this character, namely in which metal foil has its exposed face coated with acid and alkali resistant varnish, is particularly useful in connection with liquids requiring high temperatures for sterilization. For such liquids, paper spot caps even though varnished are not satisfactory, for the reason that varnished paper is permeable, and, therefore, swells and causes the underlying disc or cork to become soggy. As a result, the present invention not only permits the use of cheaper foil, such as aluminum foil for the capping of liquids with which such foils could not heretofore be used, but also permits the use of metal foil spots where paper spots have not been satisfactory even though the paper spots are varnished. That is to say, the varnishing of the foil produces results and affords advantages not obtainable with varnished paper spots and not suggested therefore by the use of varnished paper.

If desired, the adhesive may be applied at the time the varnish coated foil is assembled with the cap, for example, as described in my copending application, Serial No. 360,895, filed May 6, 1929. In this process, the strips of varnish coated foil and adhesive tissue, such as gutta percha, are collated and fed into a punching machine so that superimposed or registering discs of adhesive tissue and spot material are punched from the strips and applied to the cap, heat and pressure being applied to fuse the gutta percha and simultaneously causing adhesion of the same to both the spot disc and the cushion liner in the cap.

In Figures 3 and 4, there is shown a cap made from such a material, whether of the pre-formed type, shown in Figures 1 and 2, or of the type built up during assembly with the cap. This cap comprises a metallic body or shell 13 of the usual type, having a corrugated skirt 14. Within the cap is a disc of cushion material, such as composition cork 15. This liner or disc is provided with a center spot 16, having its edge spaced from the skirt of the cap to provide a surrounding surface of cushion material, which may directly engage

the lip of a bottle, as described in the patent to McManus, No. 1,339,066, granted May 4, 1920.

The disc 16 comprises an exposed layer V of insoluble varnish or lacquer, an intermediate layer F of foil, such as aluminum foil, and a bottom layer A of waterproof adhesive, such as gutta percha. These layers are coextensive in area and afford a laminated center spot.

In some instances, it may be preferable to provide two layers of varnish or lacquer disposed, respectively, at opposite sides of the foil, and a cap having a center spot of this character is shown at Figure 5. In this figure there will be noted, in addition to the layers described in the foregoing description of the cap shown in Figure 4, an additional intermediate layer V' of varnish. A coating of this character may be conveniently applied by passing the foil through the varnish bath, regardless of whether only a single surface or both surfaces of the foil are to be coated.

Although the material has been described as applied to the cushion material within a cap, it will be understood, of course, that the varnished and adhesively coated foil, or the varnish foil and a separate adhesive strip, such as gutta percha tissue, may be associated with the cushion material before assembly of the latter with the cap, and whether the cushion material is in disc or strip form. Such cushion material may be a composition of cork, newsboard or fibrous material of any character suitable for use in the manufacture of closures.

I claim:

1. A cap having a sealing liner, an interior facing of metal foil on the liner, the facing leaving exposed the surface of the liner around the periphery of the facing, adhesive coextensive with the undersurface of the facing and uniting the same to the liner, and a coating of acid or alkali resistant varnish on the outer surface of the facing.

2. A cap having a sealing liner, an interior facing of metal foil on the liner, the facing leaving exposed the surface of the liner around the periphery of the facing, adhesive coextensive with the undersurface of the facing and uniting the same to the liner, and a coating of acid or alkali resistant varnish on the outer surface of the facing colored to conceal and contrast with the foil surface.

In testimony whereof I have hereunto set my hand.

ALBIN H. WARTH.

1055

May 9, 1933.

A. H. WARTH

1,908,498

METHOD OF MANUFACTURING LINER MATERIAL FOR CONTAINER CLOSURES

Original Filed Jan. 7, 1927

Fig. 1.

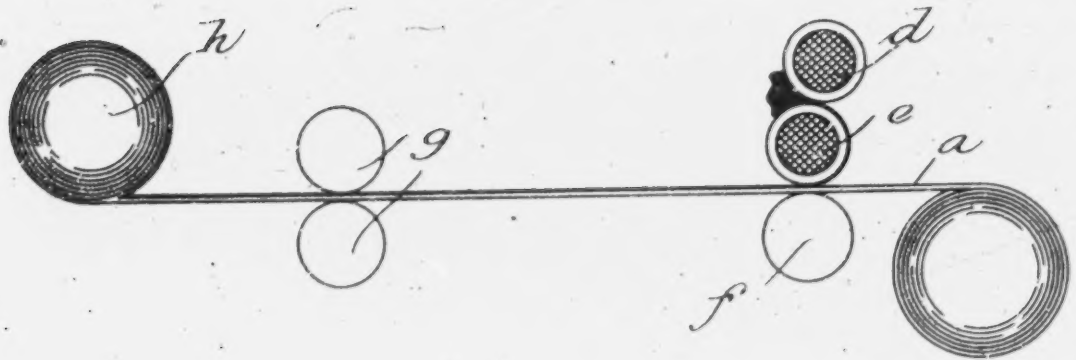


Fig. 2.

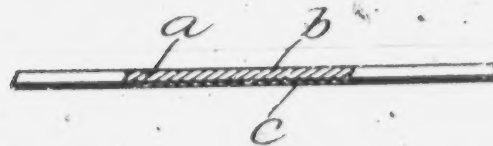


Fig. 4.

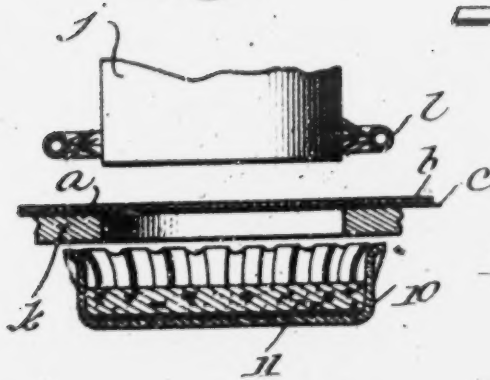


Fig. 3.



Fig. 5.

Inventor

Albin H. Warth

Lawman, Bryant & Darby
attorneys

1055

Patented May 9, 1933

1,908,496

UNITED STATES PATENT OFFICE

ALBIN H. WARTH, OF BALTIMORE, MARYLAND, ASSIGNOR TO CROWN CORK & SEAL COMPANY, INC., OF BALTIMORE, MARYLAND, A CORPORATION OF NEW YORK

METHOD OF MANUFACTURING LINER MATERIAL FOR CONTAINER CLOSURES

Original application filed January 7, 1927, Serial No. 159,743. Divided and this application filed October 30, 1930. Serial No. 492,304.

My invention relates to material for facing bottle caps and method of making same, and more particularly to strip material having applied to one face thereof a coating of gutta percha.

This application is a division of my application Serial No. 414,614, filed December 17, 1929, now Patent No. 1,899,782, granted February 28, 1933. It is also a continuation-in-part of my copending application Serial No. 494,201, filed November 7, 1930, the said application being a division of my application Serial No. 159,743, filed January 7, 1927, and now Patent No. 1,788,260, granted January 6, 1931.

Heretofore, facing material for bottle caps has been secured in position within the caps by means of gutta percha tissue. In forming the facing disks or center spots and applying them to the caps, the practice has been to cut disks from superimposed strips of facing material and gutta percha tissue, deposit the disks in the cap and apply heat for the purpose of fusing the gutta-percha tissue. Such a method is illustrated and described in my copending application Serial No. 492,546, filed October 31, 1930, as a division of my copending application Serial No. 360,895, filed May 5, 1929, and now Patent No. 1,899,783, granted February 28, 1933. As will be understood, this method of procedure is utilized in the production of caps of the "center spot" type, i. e. which are provided with a facing or "center spot" of less diameter than the cap or cushion disc within the cap. It is to the production of material for the manufacture of caps of this "center spot", that the present invention more particularly relates although in its broader aspects it is useful in the manufacture of caps having facings other than "center spots". A further illustration of a cap of the "center spot" type is to be found in the patent to McManus, No. 1,339,066, granted May 4, 1920. One difficulty in thus applying such center spots or disks to caps has arisen from the use of superimposed unconnected strips of facing material and of gutta percha, the two strips being simultaneously fed from the same roll in relation to the punch of the face applying machine.

As will be understood, facings of the "center spot" type are applied within the formed cap to the cushion liner and this method of manufacture presents problems quite distinct from the manufacture of caps having facings co-extensive with the cushion liner, since facings coextensive with the cushion liner are ordinarily produced by adhesively uniting superimposed facing material and cushion liner material, both in sheet form, thereafter simply punching laminated disks of facing material and cushion material from the laminated sheet.

With this condition, there is not only difficulty in feeding the strip, but in cutting the gutta percha with a clean sharp edge so as to ensure the binding stratum of gutta percha being co-extensive in area with the facing disk. The gutta percha binding stratum in such disks is intended not only to act as a cement, but also as a non-absorbent, gas impervious medium for avoiding possibility of the contents of a bottle getting between the facing disk and the material of the cap, either the metal shell itself or a cushion disk of cork or composition cork.

Furthermore, when thus using superimposed strips of the facing material and of gutta percha tissue, it was essential, during the application of the disk to the cap, to bond the gutta percha to both the material of the cap and the facing material.

It is desirable, in the use of facing disks of the character above referred to, that the gutta percha stratum be as thin as possible, and yet be continuous throughout the entire area of the facing disk, and particularly that it be uninterrupted about the edge of this disk, since at this point the disk should be firmly bonded so as to effectively seal the joint about the edge of the facing disk. When cutting and applying the disks of paper and gutta percha, there is no means of ascertaining whether the desired conditions are present in the completed cap. Consequently, there is always likelihood of imperfectly faced caps being produced.

With the above conditions in mind, I have provided material, in strip form, for facing bottle caps, in which one surface of the strip

is provided with a firmly adherent, continuous thin facing of gutta percha, thus avoiding all necessity for assembling strips of facing material and of gutta percha tissue preparatory to their use in the bottle cap facing machine, and all of the disadvantages growing out of this practice.

In the strip material of my invention, a very thin stratum of gutta percha is evenly distributed upon one face of a strip of facing material. The gutta percha is not only firmly bonded to this material, but is forced into the surface grain thereof, and has a smooth surface finish of sufficient thickness to form the desired firm bond between a disk cut from the strip and the material of the cap to which such disk is cemented.

The manner of applying the gutta percha to the facing strip is such as to ensure substantial uniformity in the condition of the gutta percha throughout the strip by reason of the fact that those impurities or imperfections resulting from the working of gutta percha in a mill will develop only along the edges of the facing material, where they may either be removed by trimming wide strips of the material, or will come within the wastage of narrow strips when cutting disks from such strips.

Furthermore, gutta percha tissue must be of a thickness to have sufficient inherent strength to permit of its being stripped from a roll in a mill for working same, and to admit of its being cut to the desired width and to be handled in the re-winding and the disk applying machines, and during the process of its production it has more or less of a longitudinally extending grain as distinguished from its normal granular formation.

In applying the gutta percha to the fibrous or metallic facing material in accordance with my invention, the thickness of the gutta percha is determined solely by that required to secure the desired intermediate stratum of the gutta percha in the finished cap.

In the application of heat, when bonding the facing material to the cap, when utilizing gutta percha tissue, a tendency of the gutta percha is to break up into slightly isolated, small globules, thus interrupting the continuity of the bonding stratum. Whether this is due to irregularities in the surface of the facing strip, or to a shrinkage of the gutta percha tissue when fused, I have been unable to determine. In the strip of my invention, however, the gutta-percha is thoroughly distributed throughout one face of the facing material, and the above conditions do not develop in the subsequent handling of the strips.

So far as the method of producing the strip is concerned, it is such that the effective distribution of the gutta percha throughout the entire area of the facing material is assured, and this condition cannot be disturbed

as a result of the cutting of disks from this material when in strip form. Furthermore, the gutta percha surface may be thoroughly inspected while producing the strip material, so that any imperfect product may be discarded before it reaches the disk applying machine.

It is desired to note that the surface of the strip to which the gutta-percha is not applied is always a highly polished surface, whether it be a varnish fibrous material such as paper, or a metal foil, so that the gutta percha surface will not adhere thereto. By applying the gutta percha directly to the surface of the paper and firmly bonding it there is not likelihood of difficulties arising as a result of the separation of the gutta percha from the facing strip during the unwinding operation, either as a result of slight adherence, from suction or otherwise, such as frequently occurs when using the superimposed strips of the facing material and of gutta percha tissue.

The invention consists primarily in a method of producing material for facing bottle caps consisting of a facing strip of nonabsorbent, gas impervious and acid resisting material such as resistant varnished paper or metal foil having bonded thereto, throughout one face thereof, a thin surfacing of heat fusible adhesive, such as gutta percha, all as hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawing,

Figure 1 is a diagrammatic showing of the method of producing the facing material of the invention.

Figure 2 is a longitudinal view, partly in cross section, of a fragmentary portion of said material.

Fig. 3 is a face view thereof with a portion of the facing strip broken away.

Fig. 4 is a vertical sectional view illustrating the method of applying the material to a cap, and

Fig. 5 is a vertical sectional view showing the cap with the spot applied.

Like letters refer to like parts throughout the several views.

In the accompanying drawing, the thickness dimensions are all greatly exaggerated, the thickness of the facing strip being less than five thousandths of an inch, and that of the gutta-percha surfacing less than two thousandths of an inch.

In the embodiment of the invention shown in the drawing, the facing strip is composed of what is known as express paper which is a resistant or hard, tough paper having little absorptive properties. The properties inherent to the paper, however, are such, if properly finished, as to adapt it for use as facing material for bottle caps, although it is extremely difficult to satisfactorily cement

such paper to the metal shell or cork cushion of such a closure.

In order to impart to one surface of the paper only the desired properties which will result in this strip presenting toward the contents of a bottle, a surface which is non-absorbent, gas impervious and acid resisting, I give a finish to this surface consisting of a coating of a varnish having the desired properties, and which includes therein resin, Chinawood oil, a drier and a plasticizer. This surface finish, in addition to having the properties above described, will also be sufficiently flexible to avoid the formation of cracks, or impart to the paper strip as a whole, a degree of brittleness which might result in the formation of such cracks or seams in the paper as would destroy the surface finish and permit the contents of the bottle to attack the body of the paper.

While express paper is a water finish paper, other similar papers may be used such as sulfate paper or bleached kraft paper.

The varnish finish coating above referred to is indicated at *b* in the drawing, this coating being very thin, merely sufficient to provide a continuous surface upon one side of the strip. The other side of the paper strip presents the normal finish of the paper, and has firmly bonded thereto a thin coating *c* of gutta percha, covering the entire face of the strip and presenting a smooth continuous surface, having a general granular character resulting from the manner of applying same to the paper.

It is obvious that in the handling of the completed strip of facing material the gutta percha facing *c* will be incapable of stretch or distortion because of its firm adherence to the non-elastic paper strip *a*. As compared with gutta percha tissue, the quantity of gutta percha required to secure the desired bonding action, when assembling the facing disk in a cap, is somewhat reduced.

In cutting disks from a strip of the material, there is no tendency toward mutilation of the gutta percha by reason of possible drag in the cutting dies, and each disk, as delivered from the die to within a cap, will present a continuous uninterrupted gutta percha surface upon the disk, so as to ensure, by the subsequent application of heat and pressure, a bond between the disk and the cap co-extensive in area with the disk.

In Fig. 4 there is shown a convenient arrangement for applying the disk to the cap. The cap 10 is of the type having an interior facing 11 of cushion material, such as composition cork, and is shown as arranged beneath cutting dies *j, k*. The paper in strip form is fed beneath the die *j* with the gutta-percha coating *c* facing the cap. With the descent of the punch *j* the disk is cut from the strip and pressed by the punch upon the cap which may be supported by any suitable

means (not shown). As illustrated in Figs. 4 and 5, the disk is preferably of smaller diameter than the cap liner so as to form a substantially centrally disposed spot. The punch *j* may be maintained at elevated temperature, as by means of the burner *l*; the temperature should be sufficient to fuse the gutta-percha coating and make it tacky so that practically simultaneously with the pressing of the disks against the cap facing, the same will be adhesively united to the cap with sufficient permanency to insure accurate positioning of the disk and avoid likelihood of displacement of the same thereafter. As will be understood, when the cap is removed from the heated zone, the gutta-percha will harden and thereby firmly retain the disk in position as illustrated in Fig. 5.

Since, in applying the gutta percha to the paper, the conditions are such as to completely fill all surface pores, it is obvious that during the bonding action, in the facing machine there is no tendency of the gutta percha, during and after fusing, leaving exposed, minute openings at any point of the surface of the paper.

By reason of the thinness of the gutta percha facing *c* there is no tendency toward the expression of any of the gutta percha from between the facing disk and the portion of the cap to which it is applied.

The possibility of securing a clean cut by the dies for forming the disks, both as to the paper and as to the gutta percha facing *c*, ensures an effective bond entirely about the edge of the disk, presenting a continuous barrier of non-absorptive, gas impervious and acid resisting material at the space between the disk and the cap which will effectively prevent the seepage of the gas or fluids in a bottle between the disk and the portion of the cap to which it is applied.

In Fig. 1 of the drawing, I have illustrated the method of making the strip material of my invention. In the practice of this method, I use an ordinary mill with its heated rollers *d* and *e*. Operative in relation to the lower roller *e* is a backing roller *f*. A strip of the paper or other material *a* is drawn between the rollers *e* and *f* by means of the feed rollers *g*, by which it is passed to a re-wind mechanism indicated at *h*.

The method contemplates the feeding of the strip *a* between a backing roller *f*, and between one of the heated rolls, of a gutta percha mill *e*, thus applying a thin coating of gutta percha while hot, to one surface only of the paper strip *a*, the gutta percha hardening from its exposure to the surrounding temperature before engagement by the feed rollers *g*.

In feeding the strip *a* in the manner above described, the varnish surface thereof is presented downwardly, this surface having been applied to the paper prior to the feeding

of the strip in the mill. In this manner a very thin coating of gutta percha may be applied to one face of the strip *a*, to which it will firmly adhere while said strip is passing between the rollers *e* and *f*.

The thickness of the surface coating may be controlled by adjustment of the rollers *d* and *e*, and also by adjustment of the roller *f* in relation to the latter. In this manner, the strip *a* will have applied thereto a surfacing of gutta percha which will be evenly distributed through the entire surface of the strip, and will present a substantially smooth exterior surface, notwithstanding surface irregularities in the paper itself. The smooth polished surface *c* will avoid any possibility of a surface stratum *c* adhering to the adjoining stratum *b* after the strip is re-wound and while it is being unwound in the disk applying machine, since the gutta percha will not become tacky under normal factory temperatures.

It is preferable to apply the gutta percha in the manner above described, to wide strips of paper which are cut into narrower strips of the desired width for use with bottle caps of different diameters.

The method described has been found to be applicable to the coating of paper strips with gutta percha; if used to coat metal foil it may be desirable to employ a previous preparation of one surface of the foil to receive the gutta percha and permit it to adhere thereto with sufficient strength to permit a continuing application of gutta percha to a strip as required by the method of my invention.

Facing material embodying the invention possesses the advantages that a substantially uniform and complete distribution of the gutta percha throughout each disk cut from a strip, is assured. The additional labor of associating a strip of gutta percha tissue and a strip of facing material is avoided, and higher speeds may be attained in the facing disk applying machine. By the method of applying fused gutta percha to a facing strip, there is considerable saving, not only by the reduction in the amount of gutta percha required, as compared with the use of gutta percha tissue, but the preparation of the strips for use in the disk applying machines is very much reduced, and a more uniform quality in the bond between the disks and the caps is also assured.

I claim:

1. The herein described method of making a bottle cap liner material which consists in applying a thin stratum of fused gutta-percha to substantially the entire of one surface of a continuous strip of facing material selected from a group consisting of metallic foil and varnished coated tough paper having relatively low absorptive properties, while subjecting said material and said gutta-percha to sufficient pressure to cause the

gutta-percha to conform with, and adhere to, the surface of said material, and then cutting the coated strip into narrower strips of the width desired.

2. The herein described method of making a bottle cap liner material which consists in moving a continuous strip of resistant material selected from a group consisting of metallic foil and varnished coated tough paper having relatively low absorptive properties across a cold backing roll in operative relation to a heated roll of gutta-percha mill, and applying a thin coating of fused gutta-percha to substantially the entire of one surface of said strip by subjecting said strip and said gutta-percha to sufficient pressure to cause the gutta-percha to conform with, and adhere to, the surface of said material, and then cutting the coated strip into narrower strips of the width desired.

3. The herein described method of making a bottle cap liner material which consists in moving a continuous strip of relatively hard, tough paper having relatively low absorptive properties across a cold backing roll in operative relation to a heated roll of a gutta-percha mill, and applying a thin coating of fused gutta-percha to said strip by subjecting said strip and said gutta-percha to sufficient pressure to cause the gutta-percha to conform with, and adhere to, the surface of said material, providing the other surface of the paper with a coating of varnish, and cutting the varnished and gutta percha coated strip to narrower strips of the width desired.

4. The improved method of making a bottle cap liner material which consists in providing a strip of material which is water-proof and acid resistant selected from a group consisting of metallic foil, and hard, tough paper having relatively low absorptive properties and forming on one surface thereof a continuous coextensive coating of adhesive which is normally hard or nontacky at room temperature but softens upon the mere application of heat, and cutting the varnished and gutta-percha coated strip to narrower strips of the width desired.

5. The improved method of preparing for crown caps facing material in strip form adapted to have center spot disks punched therefrom and applied to the cap by the mere application of heat and pressure which consists in providing highly flexible material selected from a group consisting of metallic foil or varnished coated tough paper having relatively low absorptive properties, coating the entire of one surface of said material while in the form of sheets having several times the width of the final strip desired with a continuous thin adherent and coextensive layer of adhesive which is fusible upon the mere application of heat, impervious to water, highly flexible, and substantially non-tacky

at room temperature, and then cutting the coated sheet into narrow strips.

6. The improved method of preparing for crown caps facing material in strip form adapted to have center spot disks punched therefrom and applied to the cap by the mere application of heat and pressure which consists in providing highly flexible material selected from a group consisting of metallic foil or varnished coated tough paper having relatively low absorptive properties, moving said material in sheet form having several times the width of the final strip desired in operative relation to a heated roll of a gutta percha mill and applying to substantially the entire of one surface thereof of thin coating of fused gutta percha by subjecting the sheet to sufficient pressure to cause the gutta percha to conform with and adhere to the surface of said material, and then cutting the coated sheet into relatively narrow strips of the width desired.

7. The improved method of preparing for crown caps facing material in strip form adapted to have center spot disks punched therefrom and applied to the cap by the mere application of heat and pressure which consists in providing highly flexible metallic foil, coating substantially the entire of one surface of said foil while in the form of a sheet having several times the width of the final strip desired with a continuous thin, adherent and coextensive layer of gutta percha fusible upon the mere application of heat, and then cutting the coated sheet into relatively narrower strips.

8. The improved method of preparing for crown caps facing material in strip form adapted to have center spot disks punched therefrom and applied to the cap by the mere application of heat and pressure which consists in providing highly flexible metallic foil, coating substantially the entire of one surface of said foil while in the form of a sheet having several times the width of the final strip desired with a continuous thin, adherent and coextensive layer of adhesive which is fusible upon the mere application of heat, impervious to water, highly flexible, and substantially non-tacky at room temperature, and then cutting the coated sheet into narrow strips.

9. The improved method of preparing for crown caps facing material in strip form adapted to have center spot disks punched therefrom and applied to the cap by the mere application of heat and pressure which consists in providing highly flexible metallic foil, moving said foil in sheet form having several times the width of the final strip desired in operative relation to a heated roll of a gutta percha mill and applying to substantially the entire of one surface thereof a thin coating of fused gutta percha by subjecting the sheet to sufficient pressure to cause the gutta percha

to conform with and adhere to the surface of said material, and then cutting the coated sheet into relatively narrow strips of the width desired.

In testimony whereof I have hereunto set my hand.

ALBIN H. WARTH.

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Jan. 6, 1931.

A. H. WARTH

1,788,260

PROCESS OF PRODUCING CLOSURES

Filed Jan. 7, 1927

Fig. 1.

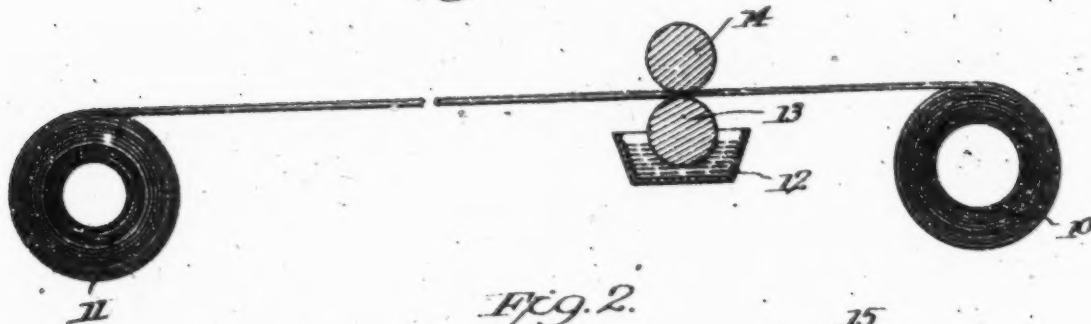


Fig. 2.

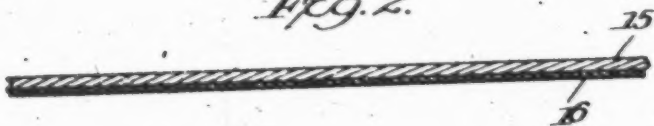


Fig. 3.

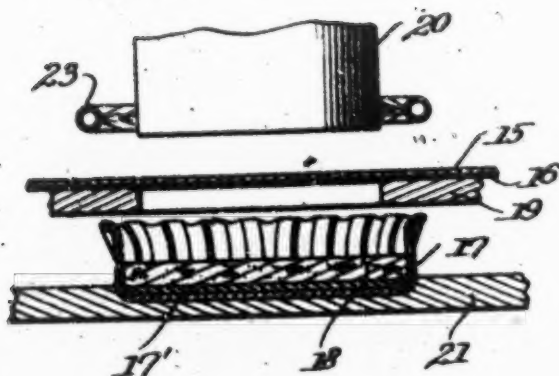


Fig. 4.

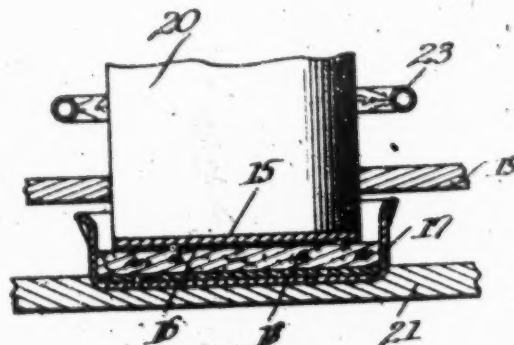


Fig. 5.

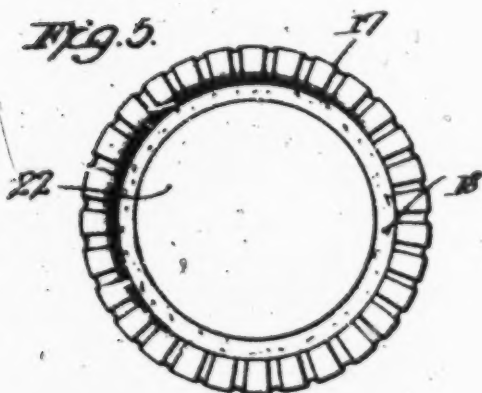
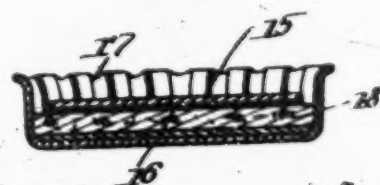


Fig. 6.



Inventor

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By *Cushman, Regent & Co.* Attorney

Patented Jan. 6, 1931

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1,788,260

UNITED STATES PATENT OFFICE

ALBIN H. WARTH, OF BALTIMORE, MARYLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
CROWN CORK & SEAL COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF
NEW YORK

PROCESS OF PRODUCING CLOSURES

REISSUED

Application filed January 7, 1927. Serial No. 159,743.

This invention relates to a method of producing closures of the type in which a sealing disk has a metal foil facing. This type of closure is characterized by the provision, upon the interior cushion or sealing disc, of a facing or spot having a surface which protects the cushion material from the liquids and gases.

Closures of the well known crown cork type comprise a metal shell having a skirt and a resilient sealing disk usually made of cork. For some uses, the sealing disks are given a non-absorbent, gas impervious and acid resistant facing of metal foil, e. g. tin foil, or aluminum foil. Aluminum foil is characterized by the fact that it is substantially non-absorbent and gas impervious, and for this reason the same and other materials having similar characteristics are used to form facing disc or spots upon the cushion material of crown caps. Ordinarily this facing is of smaller diameter than the cork disks and such crowns are known in the trade as spot center crowns.

These spot center crowns have been produced in various ways. According to one method a slot or groove is cut in the cork disk and the spot is given an intumed rim which is inserted in the slot. This method is objectionable because of its expense and because the spots are apt to drop out. According to another method the spots are pasted to the cork disks by a casein paste or a glue. In crowns so made the spots tend to loosen as the paste or glue is attacked by the packaged liquids. Furthermore, such method involves difficulties in handling and in applying the paste or glue. According to still another method the spots are secured by an underlying tissue of gutta percha or coated paper. In crowns so made, like objections are met with. For example, one difficulty in applying discs made from separate strips, such as gas and acid resistant material and the adhesive tissue strips, has arisen from the necessity for feeding the two strips to the punching and assembly machine. There is not only difficulty in feeding the strips, but in cutting the separate tissue strip with a clean, sharp edge so as to insure the binding stratum

of adhesive being coextensive in area with the disc of liquid resistant material. As will be understood, the adhesive stratum is intended to act not only as a cement, but also as a water-proof, non-absorbent, gas impervious medium for avoiding the possibility of the contents of a bottle getting between the facing disc and the material of the cap, either the metal shell itself or a cushion disc of cork or composition cork.

Furthermore, when using superimposed strips of the facing material and of adhesive tissue, it was essential, to bond the adhesive tissue to both the material of the cushion disc in the cap and the facing material.

In preparing the rolls of facing material and adhesive tissue, the practice usually followed was to form a roll of the tissue in strips of the desired width, and to unwind this roll and a roll of the facing material while feeding the two strips one over the other into the disc forming and assembling machine. This is a troublesome and expensive operation, because of the frequent breakage of the adhesive tissue and the necessity for using fairly heavy tissue to minimize this tendency. This is due partly to the fact that the facing material was substantially non-elastic, while the adhesive tissue possessed a certain degree of elasticity, thus introducing a factor of difficulty in securing a uniform paying of both the facing strip and the gutta percha tissue strip.

It is desirable, in the use of facing disks of the character above referred to, that the adhesive stratum be as thin as possible, and yet be continuous throughout the entire area of the facing disk, and particularly that it be uninterrupted about the edge of this disk, since at this point the disk should be firmly bonded so as to effectively seal the joint about the edge of the facing disk. When cutting and applying the disks of material and adhesive, there is no means of ascertaining whether the desired conditions are present in the completed cap. Consequently, there is always likelihood of imperfectly faced caps being produced.

With the above conditions in mind, I have provided material, in strip form, for facing

bottle caps, in which one surface of the strip is provided with a firmly adherent, continuous thin facing of adhesive, thus avoiding all necessity for assembling strips of facing material and of adhesive tissue preparatory to their use in the bottle-cap facing machine, and all of the disadvantages growing out of this practice.

In the strip material of my invention, a very thin stratum of adhesive is evenly distributed upon one face of a strip of facing material. The adhesive is not only firmly bonded to this material, but has a smooth surface finish of sufficient thickness to form the desired firm bond between a disk cut from the strip and the material of the cap to which such disk is cemented.

Furthermore, adhesive tissue must be of a thickness to have sufficient inherent strength to permit of its being stripped from a roll in a mill for working same, and to admit of its being cut to the desired width and to be handled in the winding and the disk applying machines, and during the process of its production it has more or less of a longitudinally extending grain, as distinguished from its normal granular formation.

In the application of heat, when bonding the facing material to the cap, when utilizing adhesive tissue, a tendency of the adhesive is to break up into slightly isolated, small globules, thus interrupting the continuity of the bonding stratum. Whether this is due to irregularities in the surface of the facing strip, or to a shrinkage of the adhesive tissue when fused, I have been unable to determine. In the strip of my invention, however, the adhesive is thoroughly distributed throughout one face of the facing material, and the above conditions do not develop in the subsequent handling of the strips.

It is an object of the present invention to provide a method of producing spot center crowns such that the spots are easily and economically secured to the sealing disks and such that they are firmly secured and not liable to become loosened in use.

With these general objects in view the invention consists in the method which will be first described and then more particularly pointed out in the claims.

According to the method of the present invention, the strip material having a surface which is substantially non-absorbent and gas impervious, such as metal foil, is coated with a substance that is devoid of tackiness when dry and has adhesive qualities when soft. In carrying out the method according to what is considered the best practice the adhesive substance is such that it can be applied cold, i. e. at room temperatures, and is waterproof or insoluble in cold water. While various materials may be used I have found a suitable adhesive in a solution of damar gum and rosin in mineral spirit or turpentine, to which

is added 5% or less of a vegetable oil such as soya bean or China-wood oil. The damar gum and rosin may be in the proportion of 35% to the whole. The adhesive may have a drier of lead resinate or the like in a proportion of 2% or less. This adhesive is waterproof and is not weakened by gases or acids, such as are present in the bottle contents with which crown caps are usually employed.

While the coating may be applied to the material in various ways, it is conveniently applied in fluid form and cold to a strip of foil from which the spots are to be cut. So far as the method of producing the strip is concerned, it is such that the effective distribution of the adhesive throughout the entire area of the facing material is assured, and this condition cannot be disturbed as a result of the cutting of discs from this material when in strip form. Furthermore, the adhesive surface may be thoroughly inspected while producing the strip material, so that any imperfect product may be discarded before it reaches the disk applying machine. In this connection it is noted that the spots may be conveniently assembled by feeding a strip of material over successive crown corks and cutting out a disk which is deposited on a cork, such assembling machinery being known in the art.

After the coating is applied to the metal foil it is dried. While this may be effected by air drying at room temperature it is more rapidly accomplished at a temperature of about 300° F. maintained for about 30 minutes. When dried the coating is devoid of tackiness so that the metal foil may be handled without difficulty or trouble. This is particularly advantageous when the metal foil is to be fed in strips because the application of the adhesive is carried out independently of the assembling steps. Moreover, the coating gives the thin metal foil more or less body which facilitates feeding and cutting. Since the adhesive is applied directly to the surface of the facing or spot material and firmly bonded thereto, there is no likelihood of difficulties arising as a result of separation of the adhesive from the facing strip during the spot-forming operation, either as a result of poor adherence or from suction or otherwise, such as frequently occurs when using superimposed strips of facing material and of adhesive tissue. Moreover, in handling this material the adhesive stratum is incapable of stretch or distortion relative to the spot strip as frequently occurs in the handling of separate strips of adhesive tissue and facing material where any stretch or distortion of the adhesive stratum results in a defective cap and when the stretch is extreme, tearing of the adhesive tissue makes necessary the stoppage of the cap machine until the strip can be repaired.

After the coating is dry, the metal foil spots

are assembled, coated side down, with the sealing disks. In case the metal foil is fed in a strip, spots may be cut out and deposited on the sealing disk, as above set forth.

At the time of assembly the coating material is softened to render it adhesive and the assembled unit is subjected to pressure. In carrying out the invention according to what is now considered the best practice the coating will be softened by heat after the crown is assembled. In cutting discs from this improved laminated strip having an adhesive stratum bonded thereto, there is no tendency toward mutilation of the adhesive layer by reason of possible drag of the cutting dies, and each disc, as delivered from the die to within a cap, will present a continuous uninterrupted adhesive surface upon the disc so as to insure, by the subsequent application of heat and pressure, a bond between the disc and the cap cushion layer coextensive in area with the disc.

This possibility of securing a clean cut by the dies for forming the discs, both as to the non-absorptive and gas impervious, and as to the adhesive stratum, insures an effective bond entirely about the edge of the spot or disc, thereby presenting a continuous barrier of non-absorptive and gas impervious material at the space between the disc and the cap which will effectively prevent the seepage of gas or fluid in a bottle between the disc and the portion of the cap to which it is applied.

Although the adhesive facing is sufficiently thick to provide an adhesive stratum or layer, it is sufficiently thin to avoid any tendency toward the expression during the application of pressure of any of the adhesive from between the facing material and the portion of the cap to which it is applied. This may be accomplished in any suitable manner, as by a heated plunger or a plunger and heated table. The heat softens the coating and renders it adhesive and the pressure serves to unite the metal foil spot to the cork.

Referring to the accompanying drawings, there is shown suitable mechanism for coating the strip and for cutting discs therefrom and adhesively uniting the disc to caps at the time of the assembly of the discs with the caps. In the drawings,

Figure 1 is a diagrammatical view showing the coating of the strip.

Figure 2 is a longitudinal sectional view of a fragment of the strip.

Figure 3 is a side elevational view partly in section showing one step in the assembly operation.

Figure 4 is a view similar to Figure 3 showing the spot as it is cut and adhesively united to the cap at the time of assembly.

Figure 5 is an interior face view of the completed cap, and

Figure 6 is a cross sectional view of the cap shown in Figure 5.

The strip of facing material should have the characteristic of aluminum foil. That is to say, it should present one surface which is non-absorbent and gas impervious. This strip may be fed from a reel 10 to a reel 11, suitably separated so that the adhesive coating may be applied and hardened between the time any portion of the strip leaves the reel 10 and is wound upon the reel 11. For the purpose of applying the adhesive, the same may be maintained in a trough 12, positioned beneath an adhesive applying roll 13, between which and a roll 14, the strip passes, so that as the rolls are rotated the adhesive is applied to the undersurface thereof. As will be understood, the adhesive hardens between the time it is applied and the winding of the laminated strip upon the reel 11.

The completed spot material or liner is illustrated in Figure 2, and comprises the layer 15 of non-absorbent and gas impervious material, such as aluminum foil having on one surface the coating 16 of adhesive, which is preferably of the character hereinbefore described. This adhesive is waterproof or liquid resistant, and will be normally hard, i. e. non-tacky, at room temperature so that the material may be conveniently handled in strip form, but quickly softens under the application of heat, becoming tacky, so that upon the application of pressure, the laminated disc will be adhesively retained in the cap. The preferred method of applying the material to the cap is to utilize, at the time of assembly, both heat and pressure to unite the spot to the cork or cushion material insert or facing of the cap.

In Figures 3 and 4, there is shown a suitable mechanism for applying the disc and adhesively uniting it to the cork insert at the time the strip is punched from the disc and assembled with the cap.

The cap 17 is of the conventional crown type having an interior facing 18 of cushion material, such as composition cork retained in the cap as by an adhesive layer 17'; the cushion disc and adhesive may be applied to the cap in any suitable manner, for example as described in the patent to Marsa, No. 1,603,786, granted Oct. 19, 1926. The caps, with the cushion discs inserted therein, may be positioned beneath the cutting dies 19, 20, by means of a traveling bed 21 having suitable sockets for receiving the cap so as to position the same accurately beneath the cutting dies. The strip material for forming the spot is fed beneath the die 20 with the adhesive coating 16 facing the cap, and when the die descends it will cut from the strip, which is fed by any suitable means (not shown), a spot or facing 22 of the character illustrated in Figures 5 and 6. The spot or disc is preferably of smaller diameter than the cap facing so as to form a substantially centrally

disposed spot which leaves around its edge an exposed portion of the cushion material adapted to engage the edge of a bottle neck, the spot being of sufficient size to close the bottle mouth and prevent contact of the contents with the cushion material.

As will be observed (Figures 3 and 4) as the punch 20 descends, it cuts from the strip a spot of the size shown in Figure 5, and continued downward movement presses this disc upon the cushion layer 18.

The punch 20 may be maintained at an elevated temperature, as by means of a burner 23, and the temperature should be sufficient to fuse or soften the adhesive coating and make it tacky so that, at the time the disc is assembled with the cap, the heat and pressure will cause the disc to be adhesively united to the surface of the cushion material with sufficient permanency to insure that the position will be retained and avoid likelihood of displacement of the disc thereafter.

The assembled unit is then permitted to cool and the cooling may advantageously be coupled with pressure, for example, by a plunger. Cooling may be effected in any suitable manner, being carried out to the congealing point of the coating material.

The resulting crown has a firmly secured metal foil spot which is not liable to become loose in use owing to the fact that the adhesive substance is not soluble in liquids more commonly sealed by crown corks. Moreover, when the metal foil is assembled with the sealing disk it is already prepared for being stuck in place, the sticking being accomplished by the simple application of heat and pressure. The coating operation is a simple one and the coated metal foil is easily handled because the dry coating is not tacky.

A cap made in accordance with this method possesses the advantage of a substantially uniform and complete distribution of the adhesive layer throughout each spot or facing disc. The method has the advantage of eliminating the labor of associating a separate adhesive strip and a strip of facing material, and the further advantage of enabling higher speeds to be maintained in the facing spot applying machine. The elimination of the danger of breakage of a separate adhesive tissue strip avoids the frequent stoppage of the machine, which was unavoidable due to the handling of the somewhat fragile and elastic adhesive tissue.

What is claimed is:

1. The improved method of manufacturing caps of the type having an interior disc of cushion material provided on its exposed face with a center spot, which comprises providing spot material in strip form having one surface formed of an exposed continuous coating of water resistant adhesive which is normally hard at room temperature but becomes tacky upon the application of heat

and having another surface to be exposed to the contents of a capped container, cutting from said strip a facing spot having one surface completely coated with said adhesive with a cap disposed beneath the portion of the strip from which the spot is cut, whereby the cutting operation positions the spot upon the cushion material with the coating between the spot and the cushion material, and upon assembly applying simultaneously to the spot pressure and sufficient heat to render the adhesive tacky, thereby causing the spot to adhere to the cushion material, and thereafter permitting the adhesive to cool and harden.

2. The improved method of manufacturing caps of the type having an interior disc of cushion material provided on its exposed face with a center spot, which comprises providing metal foil spot material in strip form having one surface formed of an exposed continuous coating of water resistant adhesive which is normally hard at room temperature but becomes tacky upon the application of heat and having another surface to be exposed to the contents of a capped container, cutting from said metal foil strip a facing spot having one surface completely coated with said adhesive with a cap disposed beneath the portion of the strip from which the spot is cut, whereby the cutting operation positions the spot upon the cushion material with the coating between the spot and the cushion material, and upon assembly applying simultaneously to the spot pressure and sufficient heat to render the adhesive tacky, thereby causing the spot to adhere to the cushion material, and thereafter permitting the adhesive to cool and harden.

In testimony whereof, I have hereunto set my hand.

ALBIN H. WARTH.

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DEFENDANT'S EXHIBIT E E E

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE

To all persons to whom these presents shall come, Greeting:

THIS IS TO CERTIFY that the annexed is a true copy from the records
of this office of the File Wrapper and Contents, in the
matter of the

Letters Patent of

Albin H. Warth, Assignor to
Crown Cork & Seal Company, Inc.,

Number 1,899,782,

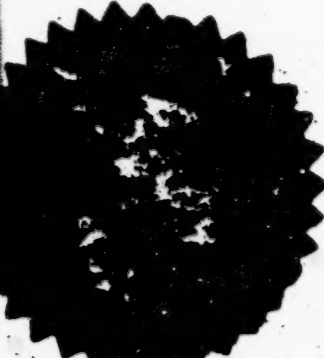
Granted February 28, 1933,

for

Improvement in Materials for Facing Bottle Caps and Methods of
Making Same.

IN TESTIMONY WHEREOF I have hereunto set my
hand and caused the seal of the Patent Office to be
affixed, at the City of Washington, this **nineteenth**
day of **January**, in the year of our Lord one
thousand nine hundred and thirty-four and of the
Independence of the United States of America the
one hundred and fifty-eighth.

ATTEST:


[Signature]
Chief of Division

[Signature]
Commissioner of Patents.

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NUMBER (Series of 1925)

414614

DIV.

St 50

PATENT NO.

1899782

DATED

FEB 28 1933

(EX'R'S BOOK)

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161 9

Name

ALBIN H. WARTH,

Assign to Crown Cork & Seal Company, Inc.,
of New York, N.Y. a city of New York,

of

BALTIMORE,

State of

MARYLAND,

Invention

MATERIAL FOR FACING BOTTLE CAPS AND METHOD OF MAKING SAME

ORIGINAL

RENEWED

APPLICATION FILED COMPLETE DEC 17, 1929

Petition, Specification,

Oath, First Fee \$20,

1 sheets Drawings,

P.C. 11-22-30

DEC 17, 1929

Division of App. No.

Examined and passed for Issue Pat 2, 1933

O. H. Blake Ex. Dir.

Notice of Allowance Pat 2, 1933

Final Fee \$ 30 Feb 2, 1933

FRANK T. BENTONTH ST PAUL MINN NEW YORK N.Y.

Cushman, Bryant & Darby, Washington D.C. First Bldg. City.
American Laundry Bldg.

Associate Attorney

Examined and passed for Issue, 192

Ex. Dir.

Notice of Allowance, 194

Final Fee, 192

No. of Claims Allowed 8 77 Print Claims 3 In O. G. Class 91-48

Title as Allowed Material For Facing Bottle Caps And Method of Making Same

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UNITED STATES AND
FOREIGN
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FRANK WENTWORTH
PATENT AND TRADE MARK CAUSES
41 PARK ROW, NEW YORK

CABLE ADDRESS:
"FROMINPAT" NEW YORK
TELEPHONE:
1939 CORTLANDT

Dec. 16th 1929.

Hon. Commissioner of Patents,
Washington, D. C.

Sir:-

Enclosed herewith is application of Albin H. Warth,
for U. S. Letters Patent upon Improvements in Material for Fac-
ing Bottle Caps and Method of Making Same, together with check
covering the Government filing fee thereon.

Respectfully,

Frank J. Wentworth

CB

ENCs.

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RECEIVED
DEC 29 1929
U.S. PATENT OFFICE
TO THE COMMISSIONER OF PATENTS:-

① Your petitioner, Albin H. Warth, a citizen of the United States, residing at Baltimore, in the County of Baltimore and State of Maryland, (whose Post Office address is 29 York Court, Baltimore, Md.) prays that Letters Patent may be granted to him for the new and useful Improvements in Material for Facing Bottle Caps and Method of Making Same, set forth in the annexed specification; and he hereby appoints Frank T. Wentworth, of 41 Park Row, in the Borough of Manhattan, City, County and State of New York, his attorney with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to sign the drawings, to receive the patent, and to transact all business in the Patent Office connected therewith.

Signed at Baltimore, in the County of Baltimore and State of Maryland, this 11th day of December 1929.

Albin H. Warth

TO ALL WHOM IT MAY CONCERN:-

Be it known that I, Albin H. Barth, a citizen of the United States, residing at Baltimore, in the County of Baltimore and State of Maryland, have invented certain new and useful Improvements in Material for Facing Bottle Caps and Method of Making Same, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to material for facing bottle caps and method of making same, and more particularly to strip material having applied to one face thereof a coating of gutta-percha.

Heretofore, facing material for bottle caps has been secured in position within the caps by means of gutta-percha tissue. In forming the facing disks and applying them to the caps, the practice has been to cut disks from superimposed strips of facing material and gutta-percha tissue, deposit the disks in the cap and apply heat for the purpose of fusing the gutta-percha tissue. One difficulty in thus applying such disks to caps has arisen from the use of superimposed unconnected strips of facing material and of gutta-percha, the two strips being simultaneously fed from the same roll in relation to the punch of the face applying machine.

With this condition, there is not only difficulty in feeding the strip, but in cutting the gutta-percha with a clean sharp edge so as to ensure the binding stratum of gutta-percha being co-extensive in area with the facing disk. The gutta-percha binding stratum in such disks is intended not only to act as a cement, but also as a non-absorbent, as impervious medium for avoiding possibility of the contents of a bottle getting between the facing disk and the material of the cap,

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either the metal shell itself or a cushion disk of cork or composition cork.

Furthermore, when thus using superimposed strips of the facing material and of gutta-percha tissue, it was essential, during the application of the disk to the cap, to bond the gutta-percha to both the material of the cap and the facing material.

In preparing the rolls of facing material and gutta-percha tissue, the practice usually followed was to form a roll of the tissue in strips of the desired width, and to unwind this roll and a roll of the facing material and pass them through a re-winding machine. This is a troublesome and expensive operation because of the frequent breakage of the gutta-percha tissue if the re-winding machine be operated at too high a speed, and the necessity for using fairly heavy tissue to minimize this tendency. This is due partly to the fact that the facing material was substantially non-elastic, while the gutta-percha possessed a certain degree of elasticity, thus introducing a factor of difficulty in the re-winding machine in securing a uniform paying out of both the facing strip and the gutta-percha tissue.

It is desirable, in the use of facing disks of the character above referred to, that the gutta-percha stratum be as thin as possible, and yet be continuous throughout the entire area of the facing disk, and particularly that it be uninterrupted about the edge of this disk, since at this point the disk should be firmly bonded so as to effectively seal the joint about the edge of the facing disk. When cutting and applying the disks of paper and gutta-percha, there is no means of ascertaining whether the desired conditions are present in the completed cap. Consequently, there is always likelihood

of imperfectly faced caps being produced.

With the above conditions in mind, I have provided material, in strip form, for facing bottle caps, in which one surface of the strip is provided with a firmly adherent, continuous thin facing of gutta-percha, thus avoiding all necessity for assembling strips of facing material and of gutta-percha tissue preparatory to their use in the bottle cap facing machine, and all of the disadvantages growing out of this practice.

In the strip material of my invention, a very thin stratum of gutta-percha is evenly distributed upon one face of a strip of facing material. The gutta-percha is not only firmly bonded to this material, but is forced into the surface grain thereof, and has a smooth surface finish of sufficient thickness to form the desired firm bond between a disk cut from the strip and the material of the cap to which such disk is cemented.

The manner of applying the gutta-percha to the facing strip is such as to ensure substantial uniformity in the condition of the gutta-percha throughout the strip by reason of the fact that those impurities or imperfections resulting from the working of gutta-percha in a mill will develop only along the edges of the facing material, where they may either be removed by trimming wide strips of the material, or will come within the wastage of narrow strips when cutting disks from such strips.

Furthermore, gutta-percha tissue must be of a thickness to have sufficient inherent strength to permit of its being stripped from a roll in a mill for working same, and to admit of its being cut to the desired width and to be handled in the re-winding and the disk applying machines, and during the

process of its production it has more or less of a longitudinally extending grain as distinguished from its normal granular formation.

5 In applying the gutta-percha to the fibrous or metallic facing material in accordance with my invention, the thickness of the gutta-percha is determined solely by that required to secure the desired intermediate stratum of the gutta-percha in the finished cap.

10 In the application of heat, when bonding the facing material to the cap, when utilizing gutta-percha tissue, a tendency of the gutta-percha is to break up into slightly isolated, small globules, thus interrupting the continuity of the bonding stratum. Whether this is due to irregularities in the surface of the facing strip, or to a shrinkage of the gutta-percha tissue when fused, I have been unable to determine. In the strip
15 of my invention, however, the gutta-percha is thoroughly distributed throughout one face of the facing material, and the above conditions do not develop in the subsequent handling of the strips.

20 So far as the method of producing the strip is concerned, it is such that the effective distribution of the gutta-percha throughout the entire area of the facing material is assured, and this condition cannot be disturbed as a result of the cutting of disks from this material when in strip form.
25 Furthermore, the gutta-percha surface may be thoroughly inspected while producing the strip material, so that any imperfect product may be discarded before it reaches the disk applying machine.

30 It is desired to note that the surface of the strip to which the gutta-percha is not applied is always a highly polished surface, whether it be a varnish fibrous material such

5 as paper, or a metal foil, so that the gutta-percha surface will not adhere thereto. By applying the gutta-percha directly to the surface of the paper and firmly bonding it there is no likelihood of difficulties arising as a result of the separation of the gutta-percha from the facing strip during the unwinding operation, either as a result of slight adherence, from suction or otherwise, such as frequently occurs when using the superimposed strips of the facing material and of gutta-percha tissue.

10 The invention consists primarily in material for facing bottle caps consisting of a facing strip of non-absorbent, gas impervious and acid resisting material, having bonded thereto, throughout one face thereof, a thin surfacing of gutta-percha; and in such other novel characteristics, and in the novel steps and practices of producing same, all as hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings,

20 Fig. 1 is a diagrammatic showing of the method of producing the facing material of the invention;

Fig. 2 is a longitudinal view, partly in cross section, of a fragmentary portion of said material; and

Fig. 3 is a face view thereof with a portion of the facing strip broken away.

25 Like letters refer to like parts throughout the several views.

In the accompanying drawings, the thickness dimensions are all greatly exaggerated, the thickness of the facing strip being less than five thousandths of an inch, and that of the gutta-percha surfacing, less than two thousandths of an inch.

In the embodiment of the invention shown in the draw-

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ing, the facing strip is composed of what is known as Express paper which is a hard, tough paper having little absorptive properties. The properties inherent to the paper, however, are such, if properly finished, as to adapt it for use as facing material for bottle caps, although it is extremely difficult to satisfactorily cement such paper to the metal shell or cork cushion of such a closure.

In order to impart to one surface of the paper only the desired properties which will result in this strip presenting toward the contents of a bottle, a surface which is non-absorbent, gas impervious and acid resisting, I give a finish to this surface consisting of a coating of a varnish having the desired properties, and which includes therein resin, China-wood oil, a drier and a plasticizer. This surface finish, in addition to having the properties above described, will also be sufficiently flexible to avoid the formation of cracks, or impart to the paper strip as a whole, a degree of brittleness which might result in the formation of such cracks or seams in the paper as would destroy the surface finish and permit the contents of the bottle to attack the body of the paper.

20
R.B.

While Express paper is a water leaf finish paper, other similar papers may be used such as Sulfite paper or Bleached Kraft paper.

The varnish finish coating above referred to is indicated at h in the drawings, this coating being very thin, merely sufficient to provide a continuous surface upon one side of the strip. The other side of the paper strip presents the normal finish of the paper, and has firmly bonded thereto a thin coating of gutta-percha, covering the entire face of the strip and presenting a smooth continuous surface, having a general granular character resulting from the manner of applying

same to the paper.

It is obvious that in the handling of the completed strip of facing material the gutta-percha facing *g* will be incapable of stretch or distortion because of its firm adherence to the non-elastic paper strip *g*. As compared with gutta-percha tissue, the quantity of gutta-percha required to secure the desired bonding action, when assembling the facing disk in a cap, is somewhat reduced.

In cutting disks from a strip of the material, there is no tendency toward mutilation of the gutta-percha by reason of possible drag in the cutting die, and each disk, as delivered from the die to within a cap, will present a continuous uninterrupted gutta-percha surface upon the disk, so as to ensure, by the subsequent application of heat and pressure, a bond between the disk and the cap co-extensive in area with the disk. ⁶ 10^u

Since, in applying the gutta-percha to the paper, the conditions are such as to completely fill all surface pores, it is obvious that during the bonding action, in the facing machine there is no tendency of the gutta-percha, during and after fusing, leaving exposed, minute openings at any point of the surface of the paper.

By reason of the thinness of the gutta-percha facing *g*, there is no tendency toward the expression of any of the gutta-percha from between the facing disk and the portion of the cap to which it is applied.

The possibility of securing a clean cut by the dies for forming the disks, both as to the paper and as to the gutta-percha facing *g*, ensures an effective bond entirely about the edge of the disk, presenting a continuous barrier of non-absorptive, gas impervious and acid resisting material at the space between the disk and the cap which will effectively pre-

vent the seepage of gas or fluids in a bottle between the disk and the portion of the cap to which it is applied.

In Fig. 1 of the drawings, I have illustrated the method of making the strip material of my invention. In the practice of this method, I use an ordinary mill with its heated rollers *d* and *e*. Operative in relation to the lower roller *e* is a backing roller *f*. A strip of the paper or other material *a* is drawn between the rollers *e* and *f* by means of the feed rollers *g*, by which it is passed to a re-wind mechanism indicated at *h*.

The method contemplates the feeding of the strip *a* between a backing roller *f*, and between one of the heated rollers of a gutta-percha mill *e*, thus applying a thin coating of gutta-percha while hot, to one surface only of the paper strip *a*, the gutta-percha hardening from its exposure to the surrounding temperature before engagement by the feed rollers *g*.

In feeding the strip *a* in the manner above described, the varnish surface thereof is presented downwardly, this surface having been applied to the paper prior to the feeding of the strip in the mill. In this manner a very thin coating of gutta-percha may be applied to one face of the strip *a*, to which it will firmly adhere while said strip is passing between the rollers *e* and *f*.

The thickness of the surface coating may be controlled by adjustment of the rollers *d* and *e*, and also by adjustment of the roller *f* in relation to the latter. In this manner, the strip *a* will have applied thereto a surfacing of gutta-percha which will be evenly distributed throughout the entire surface of the strip, and will present a substantially smooth exterior surface, notwithstanding surface irregularities in the paper itself. The smooth polished surface *e* will avoid any

possibility of a surface stratum c adhering to the adjoining stratum b after the strip is re-wound and while it is being unwound in the disk applying machine, since the gutta-percha will not become tacky under normal factory temperatures.

It is preferable to apply the gutta-percha in the manner above described, to wide strips of paper which are cut into narrower strips of the desired width for use with bottle caps of different diameters.

The method described has been found to be applicable to the coating of paper strips with gutta-percha, ^{and it is also applicable} ~~it being extremely doubtful if it could be advantageously used to coat metal foil, without a previous preparation of one surface of the foil to receive the gutta-percha and permit it to adhere thereto with sufficient strength to permit a continuing application of gutta-percha to a strip as required by the method of my invention.~~

Facing material embodying the invention possesses the advantages that a substantially uniform and complete distribution of the gutta-percha throughout each disk cut from a strip, is assured. The additional labor of associating a strip of gutta-percha tissue and a strip of facing material is avoided, and higher speeds may be attained in the facing disk applying machine. By the method of applying fused gutta-percha to a facing strip, there is considerable saving, not only by the reduction in the amount of gutta-percha required, as compared with the use of gutta-percha tissue, but the preparation of the strips for use in the disk applying machines is very much reduced, and a more uniform quality in the bond between the disks and the caps is also assured.

^{for the bottling of many liquids}
It is preferable to employ facing material composed of paper of the general character herein described, as compared

with the use of metal foils.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:

1:- Material for facing bottle caps consisting of a facing strip of non-absorbent, gas impervious and acid resisting material, having bonded thereto, throughout one face thereof, a thin surfacing of gutta-percha.

2:- Material for facing bottle caps consisting of a paper strip, having applied to one surface thereof a surface of non-absorbent, gas impervious and acid resisting material, and having bonded thereto, throughout the other surface thereof, a thin surfacing of gutta-percha.

3:- ^{As new article of manufacture,} Material for facing bottle caps consisting of a paper strip, having applied to one surface thereof a surface coating of varnish consisting of resin, China-wood oil, a drier and a plasticizer, whereby said surface of the paper is made non-absorbent, gas impervious and acid resisting, and having bonded thereto, throughout the other surface thereof, a thin surfacing of gutta-percha.

4:- The herein described method of making material for facing bottle caps consisting of applying a thin stratum of fused gutta-percha to one surface of a continuous strip of fibrous facing material, while subjecting said material and said gutta-percha to sufficient pressure to cause the gutta-percha to conform with, and adhere to, the surface of said material.

5:- The herein described method of making material for facing bottle caps consisting of moving a continuous strip of paper across a cold backing roll in operative relation to a heated roll of a gutta-percha mill, and applying a thin coating of fused gutta-percha to said strip by subjecting said

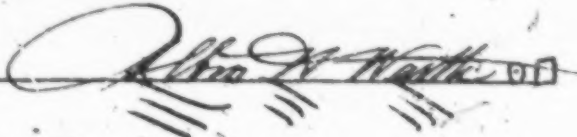
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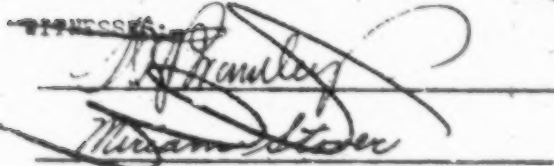
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strip and said gutta-percha to sufficient pressure to cause
the gutta-percha to conform with, and adhere to, the surface
of said material.

In witness whereof I have hereunto affixed my sig-
nature in the presence of two subscribing witnesses, this

of December 1929.


Albert N. Walker


M. J. Hamilton


William H. Stone

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STATE OF MARYLAND :
: ss.-
COUNTY OF BALTIMORE :

Albin H. Warth, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and a resident of Baltimore, in the County of Baltimore and State of Maryland; that he verily believes himself to be the original, first and sole inventor of the Improvements in Material for Facing Bottle Caps and Method of Making Same, described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication, in any country, before his invention or discovery thereof, or more than two years prior to this application, or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent upon said invention has been filed by him or his representatives or assigns in any country foreign to the United States.

Albin H. Warth

Subscribed and sworn to before me, this 11th day of

Dec, 1932.

W. H. Brainerd
MY COMMISSION EXPIRES MAY 1, 1934
NOTARY PUBLIC



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Power to Inspect & Make Copies # 2
Crown Cork & Seal Company, Inc.

Baltimore, Md.

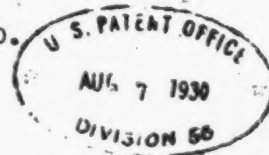
NEW PROCESS CORK CO., INC.
THE CROWN CORK & SEAL CO.
OF BALTIMORE, MD.
CONSOLIDATED

ATTORNEY'S ROOM

AUG 7 1930

U.S. PAT.

August 5th, 1930.

IN THE UNITED STATES PATENT OFFICE.

Name: Albin H. Warth,

Serial No. 414,614

Filing Date: December 17th, 1929.

Crown Cork and Seal Company, Inc. assignee of
record of the entire right, title and interest in the
above entitled application,

hereby gives

Messrs. Cushman, Bryant & Darby, a firm composed of Arlon
V. Cushman, Arthur L. Bryant and John J. Darby, whose
registry number is 7196, access to the above appli-
cation with power to inspect the application file in the
Patent Office and make copies of all papers.

CROWN CORK & SEAL COMPANY, INC.

By

Vice-President.

OK
7/11/30
T. J. Sutherland

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new



Applicant:

Alton H. Wirth

Invention:

Filed: *Dec. 17. 1929*

Ser. No. *414614*

HON. COMMISSIONER OF PATENTS,

COCKET DIVISION
SEP 12 1930
U. S. PATENT

Please recognize as ~~associate~~ attorneys in the above named case, with full powers of prosecution, Messrs. Cushman, Bryant & Darby, a firm composed of Arlon V. Cushman, Arthur L. Bryant and John J. Darby, Jr. (Reg. No. 7196), Washington Loan & Trust Co. Building, Washington, D. C.

All former powers are hereby revoked.

Respectfully,

J. E. Robertson

Crown Cork & Seal Company, Inc.

W. H. P. Co.

Aug 27 1930

Accepted

SEP 13 1930

J. E. Robertson
Commissioner

ccc/11

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DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
WASHINGTON

September 16, 1930

Cushman, Bryant & Derby
Washington Loan & Trust Bldg.,
Washington, D. C.

Applicant Albin H. Warth

Serial No. 414,614

Filed..... Dec. 17, 1929

For..... Material for Facing Bottle Caps and
Method of Making Same

Div. 58.

In this case your power of attorney has been accepted.

Respectfully,

Thomas E. Robertson

11-2029

Commissioner.

by assignee
Revoking power of attorney

to

Frank T. Wentworth
41 Park Row
New York, N. Y.

1085

1329

Div. 50 Room

322

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Paper No. 5

Address only
 "The Commissioner of Patents,
 Washington, D. C."
 and not any official by name

DEPARTMENT OF COMMERCE
 IV/K UNITED STATES PATENT OFFICE
 WASHINGTON

All our communications respecting this
 application should give the serial number,
 date of filing, and name of
 the applicant

Please find below a communication from the EXAMINER in
 charge of this application.

Thomas E. Robertson
 Commissioner of Patents.

D.P.O. 11-2000

Cushman, Bryant & Darby,
 Washington Loan & Trust Bldg.,
 Washington, D. C.

Applicant: Albin H. Warth

Ser. No. 414,614
 Filed Dec. 17, 1929
 For Material for Facing Bottle
 Caps and Method of Making
 Same

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Warth	1,656,614	Sept. 6, 1924	215-29(106-8)
Lange	1,758,610	May 13, 1930	91-68X

Division is required between (I) Claims 1 to 3 inclusive directed to an article of manufacture which can be made by a process different from that claimed, and classifiable in Class 91, 154 or 215; (II) Claims 4 and 5 directed to a process of coating a base with gutta percha classifiable in Class 91, Subclass 68 or Class 18.

The two inventions are entirely distinct and separate, and their field of search is not co-extensive.

Pending election no action is taken on the merit of the claims.

3.m.

W. Blake
 Examiner.

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c/a affidavit



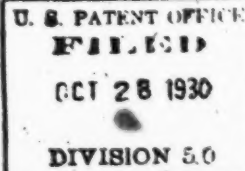
IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

METHOD FOR FACING BOTTLE CAPS
& METHOD OF MAKING SAME,

Filed Dec. 17, 1929,

Serial No. 414,614.



Div. 50.

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

We hereby authorize and request entry of the following amendments in the above entitled application.

IN THE CLAIMS:

Cancel claims 4 and 5.

~~and the following claims:~~

1. ^{in strip form} As a new article of manufacture, bottle cap liner material, comprising paper having a high gloss and having a coating of varnish on one surface of the paper and bonded to the other surface thereof a coating of gutta percha.

2. ^{increased} As a new article of manufacture, paper having a high gloss and having a coating of varnish on one surface of the paper and a coating of gutta percha on the other surface.

REMARKS

Applicant has complied with the requirement for division, and herewith presents two article claims somewhat similar to the article claims originally filed.

In view of the prompt amendment, in response to the requirement for division, this application is thought

to be entitled to immediate action on the merits in accordance with the Order of the Commissioner 2670:

"Where the first action by the Examiner upon an application is limited to a requirement for division, the application will thereafter be given preference in the order of examination over other applications previously acted upon until it has received one action upon the merits, provided the applicant makes prompt response to the Examiner's requirement for division". (287 O. G. 409)

In order to expedite the prosecution of the case, applicant presents, with this amendment, an affidavit under Rule 75, antedating the patent to Lange #1,758,61 May 13, 1930. It is thought that an interference with this patent is unnecessary for the reason that, in a companion application, (Ser. No. 360,895, filed May 6, 1929) the Examiner has held that the Lange patent is limited to gutta percha applied in solution form. In that case, the Examiner said:

"Secondly, the claim recites a "coating of gutta percha". Referring to the specification of the patent it is found that the gutta percha is applied in the form of a solution, the solvent being suitably driven off to leave a thin film of gutta percha. Patentee specifically refers to the objections and disadvantages resulting from the use of gutta percha in thin sheet form (page 3, lines 41 to 56) and seeks to escape these objectionable results by applying the adhesive in liquid form, which is expressed in the claim by the word "coating". Applicant does not apply the gutta percha in liquid form as a coating but rather in thin sheet form. Consequently, this claim does not read upon applicant's disclosure inasmuch as he has disclosed no application of the adhesive in liquid form to provide a coating".

The above ruling of the Examiner, with reference to the Lange patent and also with reference to the disclosure of the applicant, fully applies to the present case. Admittedly the applicant does not disclose the application of gutta percha in solution, i. e. with a solvent. In

the present case, plastic gutta percha is rolled in a thin layer upon one surface of the paper to provide a stratum or surfacing. Whether the Examiner is right in his interpretation of the Lange claim, is a matter which seems immaterial at this time, since applicant is not presenting claims limited to a solution or precipitated coating, although obviously presenting claims which dominate this specific form of coating.

Of course, the terms "stratum" and "surfacing", as used in the specification, are intended to cover the gutta percha in the final product without reference to its form at the time it is applied. The form of the gutta percha at the time it is applied relates to the method of manufacture, and this is claimed by the application of a divisional case, which is being filed.

The term "bonded" refers to the union of the gutta percha with the paper.

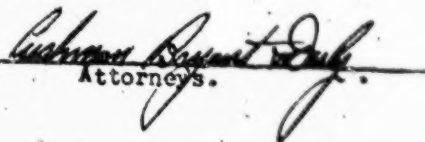
The applicant was the first to apply to one surface of paper of the character defined, a varnish coating or surfacing and, to the opposite surface, a surfacing or stratum of gutta percha which adheres to the paper.

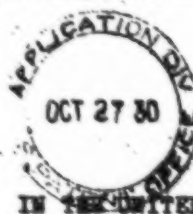
The two new claims presented by this amendment are substantially identical. Claim 6 has been drafted by applicant as a proper definition of his invention, and is thought to be allowable without an interference with the Lange patent for the reasons stated by the Examiner. However, applicant is defining the same invention, although by slightly different terms, in claim 7, which contains the precise language of the Lange claim. He is doing this, so that if the Examiner feels disposed to modify his position, he may do so and

-5-

promptly declare an interference between this application or applicant's copending application and the Lange patent.

Respectfully,


Attorneys.



IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

METHOD FOR FACING BOTTLE CAPS
& METHOD OF MAKING SAME,

Filed Dec. 17, 1929,

Serial No. 414,614,

Div. 50.

A F F I D A V I TCITY OF BALTIMORE)
SS.
STATE OF MARYLAND)

GEORGE GOEBEL, being duly sworn, deposes and says:

I am an engineer in the employ of Crown Cork & Seal Company, Inc., manufacturers of bottle caps, crown corks, etc., and having a place of business in the City of Baltimore, and State of Maryland.

I am familiar with the invention disclosed in the above entitled application of Albin H. Warth, and have read the accompanying amendment, as well as the claims standing in the application.

The said Albin H. Warth provided for the Crown Cork & Seal Company, Inc., prior to July 3, 1929, high gloss or express paper having a varnish coating on one surface and an adhering stratum or surfacing of gutta percha on the other surface. This paper was produced in both disc form and sheet or strip form, and was employed as a liner in caps prior to July 3, 1929. The gutta percha surfacing was used to unite the material to the cork insert within the cap and the varnished surface of the paper was left exposed.

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Further Deponent sayeth nat.

George Sacbal

Subscribed and sworn to before me, a Notary Public,
this 21st day of October, 1930.

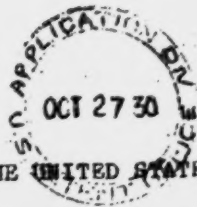
Flora MacLellan
Notary Public.

MY COMMISSION EXPIRES MAY 4, 1931

SEAL.

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IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

METHOD FOR FACING BOTTLE CAPS
& METHOD OF MAKING SAME,

Filed Dec. 17, 1929,

Serial No. 414,614.

Div. 50.

AFFIDAVIT UNDER RULE 75

CITY OF BALTIMORE)
188.
STATE OF MARYLAND)

ALBIN H. WARTH, being first duly sworn, deposes and says:

I am the applicant identified in the above entitled application, and have read the accompanying amendment.

Prior to July 3, 1929, I made and used in bottle caps liner material in both disc and sheet or strip form, the material comprising express paper which has a high gloss, this paper being provided on one surface with a coating of varnish and on the other surface with a stratum or surfacing of gutta percha in adhesive union with the paper. This material was used under my supervision by the Crown Cork & Seal Company, Inc., of Baltimore, Maryland, in the manufacture of bottle caps prior to July 3, 1929. It was applied to the caps by utilizing the gutta percha stratum or surfacing to unite the paper to the cork liner or insert in the cap. The varnish surface of the paper was left exposed.

I do not know and do not believe that the invention has been in public use or on sale in this country, or patented or described in a printed publication in this

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or any foreign country for more than two years prior
to my above entitled application, and I have never
abandoned the invention.

This affidavit is made for the purpose of antedating
the patent to Lange, No. 1,758,610, granted May 15, 1930.

Further Deponent sayeth not.

Albin H. Wirth

Subscribed and sworn to before me, a Notary Public,
this 21 day of October, 1930.

Luella Brady
Luella Brady, Notary Public.

SEAL.

INTERFERENCEInterference No. 60878Paper No. 7Name, Albin H. WarthSerial No. 414,614Title, Material for Facine Bottle Caps and Method of Making SameFiled, Dec. 17, 1929Interference with Louven G. Lange, Pat. 1,758,610**DECISIONS OF**

Law Examiner, _____

Dated, _____

Ex'r of Interferences, D. A. A. A. A. A.Dated, June 30, 1932Board, AffirmedDated, October 17, 1932

Commissioner, _____

Dated, _____

REMARKS:

This should be placed in each application or patent involved in interference in addition to the interference letters by Primary Examiner.

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Div. 50. Room 322

Address only
The Commissioner of Patents
Washington, D. C.
and not any official by name

DEPARTMENT OF COMMERCE

UNITED STATES PATENT OFFICE
WASHINGTON

Paper No. 8

All communications respecting this
application should give the serial and the
date of filing, and name of
the applicant

Copy sent Assignee

Please find below a communication from the EXAMINER in
charge of this application

Thomas E. Robertson
Commissioner of Patents

★ DEC 20 1930

MAILED

Applicant: Albin H. Warth

Ser. No. 414,614
Filed Dec. 17, 1929
For Material for Facing
Bottle Caps and Methods of
Making Same

Gushman, Bryant & Darby,
Washington Loan & Trust Bldg.,
Washington, D. C.

The case, above referred to, is forwarded to the Examiner of Interferences because it is adjudged to interfere with others, hereafter specified. The question of priority will be determined in conformity with the Rules. The interference will be identified

as No. 60878 On or before JAN 19 1931

the statement demanded by rule 110 must be sealed up and filed with the subject of invention, and name of party filing it, indorsed on the envelope. The subject-matter involved in the interference is

Count 1. As a new article of manufacture, paper having a high gloss and having a coating of varnish on one surface of the paper and a coating of gutta percha on the other surface thereof.

This interference involves your application above identified and a patent No. 1,758,610 for Adhesive Backing granted to Louvern G. Lange May 13, 1930 whose address is 39 High St., Passaic, New Jersey, and whose attorneys of record are Pennie, Davis, Marvin and Edmonds of 165 Broadway, New York, N. Y., the application for said patent having been filed July 3, 1929, Serial No. 375,833.

The relation of the counts of the interference to the claims of the respective parties is as follows:-

Count	Warth	Lange
1	7	1

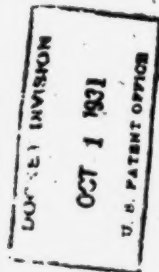
After termination of the interference this application will be held for restriction and revision under Rule 96.

Claims 1, 2, 3 and 6 will be held subject to rejection as unpatentable over the issue in the event of an award of priority adverse to applicant.

Chas. H. Blair
Examiner.

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Applicant: Albin H. Warth,

Invention: METHOD FOR FACING BOTTLE
CAPS & METHOD OF MAKING SAME,

Filed: Dec. 17, 1929,

Ser. No. 414,614

Interference No. 60,878

HON. COMMISSIONER OF PATENTS,

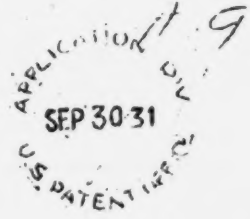
SIR:

We hereby substitute as attorneys in the above named case, Messrs.
Cushman, Bryant, Darby & Cushman, a firm composed of Arlon V. Cushman,
Arthur L. Bryant, John J. Darby and William M. Cushman (Reg. No. 7196),
American Security Building, Washington, D. C.

Respectfully,

Cushman Bryant & Darby

Sept. 30 1931



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10/13/11

APPLICATION BY
FEB - 17 1933
U.S. PATENT OFFICE

THE UNITED STATES PATENT OFFICE

Albin H. Warth,

MATERIAL FOR BOTTLE
CAPS & METHOD OF MAKING SAME,

Filed December 17, 1929,

Serial No. 414,614.

Div. 50.

* * *

January 31, 1933

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

We hereby authorize and request entry of the following
amendments in the above entitled application.

IN THE SPECIFICATION

Page 2

Line 8 cancel the paragraph beginning "In preparing
etc.," and ending in line ²¹14.

Page 4

Line 12 correct the spelling of "globules".

Page 6

Line 21 cancel "leaf".

Page 9

Lines 10 and 11 cancel "it being extremely doubtful if
it could be advantageously used" and substitute --and it is also
applicable--.

Line 12 cancel "without a previous preparation of" and
substitute --, but in coating foil it is desirable to previously
prepare, as by the application of a coating,--.

Next to last line after "preferable" insert --for the
bottling of many liquids--.

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IN THE CLAIMS

Cancel claims 1 and 2.

Claim 3

Line 1 change "Material" to --material--, and before "material" insert --As a new article of manufacture,--.

Line 5 correct the spelling of "impervious".

Claim 6

Line 2 after "material" insert --in strip form--.

Add the following claims:

4.8.4 As a new article of manufacture, bottle cap spotting material in strip form comprising express paper having a coating of varnish on one surface and bonded to the other surface thereof a coating of gutta percha.

9.5 As a new article of manufacture, bottle cap spotting material in strip form comprising bleached kraft paper having a coating of varnish on one surface and bonded to the other surface thereof a coating of gutta percha.

10.5 As a new article of manufacture, laminated bottle cap spotting material in strip form comprising hard, tough paper having relatively low absorptive properties, a coating of resistant varnish on one surface of the paper and bonded to the other surface a coating of heat fusible, waterproof and flexible adhesive.

11.5 As a new article of manufacture, laminated bottle cap spotting material in strip form comprising hard, tough paper having relatively low absorptive properties, a coating of resistant varnish on one surface of the paper and bonded to the other surface a coating of gutta percha.

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B
12. As a new article of manufacture, highly flexible material in sheet or strip form adapted for the spotting of cushion discs of crown caps with center spots of less diameter than the disc diameter by the mere application of heat and pressure consisting of a continuous layer of material selected from a group consisting of metallic foil and varnish coated tough paper having relatively low absorptive properties, said layer being coated on one side with an exposed continuous layer of waterproof, flexible, and acid resistant adhesive adherent to the foil and adapted to adhere to a cork disc, said adhesive being substantially non-tacky at room temperature but fusible upon the application of heat and substantially impervious to moisture whereby spots may be punched from the strip and united to the cushion discs of caps by the mere application of heat and pressure.++

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REMARKS

The interference (60,878) in which this application was involved having terminated favorably to the applicant, it is requested that this case be considered, and it is thought that the same is in condition for allowance.

The new claims with the exception of claim 12 are specific to coated paper. Claim 12 is generic to the subject matter of this application and of the co pending case, Serial No. 494,801, filed November 7, 1930.

Respectfully,

Robert J. [Signature]
Attorneys.

eee/34

JJD:U

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IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

MATERIAL FOR BOTTLE CAPS
& METHOD OF MAKING SAME,

Filed December 17, 1929,

Serial No. 414,614.

Div. 50.

* * *

DISTRICT OF COLUMBIA:SS.

Albin H. Warth, whose application for Letters Patent for Improvements in Material for Bottle Caps & Method of Making Same, was filed December 17, 1929, Serial No. 414,614, being duly sworn, deposes and says that he has read the attached amendment and that the subject matter thereof was part of his invention, was invented before he filed his original application, above identified, for such invention, and that deponent does not know and does not believe that the same was known or used before his invention, or patented or described in a printed publication in any country more than two years before his application, or patented in a foreign country on an application filed by him or his legal representatives or assigns more than twelve months before his application, or in public use or on sale in this country for more than two years before the date of his application, and that the same has not been abandoned.

Albin H. Warth

Subscribed and sworn to before me this 31st day of
January, 1933.

Theresa Buckhart
Notary Public. D.C.

SEAL.

ccc/jss

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ADDRESSES ONLY
THE COMMISSIONER OF PATENTS
WASHINGTON, D. C.

Div. 50
K 181

Serial No. 414,614

DEPARTMENT OF COMMERCE

UNITED STATES PATENT OFFICE

WASHINGTON February Two, 1933

Albin H. Warth, Assor.,

Your APPLICATION for a patent for an IMPROVEMENT in
Material for Facing Bottle Caps and Method of Making Same.

filed Dec. 17, 1929 has been examined and ALLOWED with 8 claims.

The final fee, THIRTY DOLLARS, WITH \$1 ADDITIONAL FOR
EACH CLAIM ALLOWED IN EXCESS OF 20, must be paid not later than
SIX MONTHS from the date of this present notice of allowance.
If the final fee be not paid within that period, the patent
will be withheld, but the application may be renewed within one
year after the date of the original notice with a renewal fee
of \$30 and \$1 additional for each claim in excess of 20.

The office delivers patents upon the day of their date,
on which date their term begins to run. The preparation of the
patent for final signing and sealing will require about four
weeks, and such work will not be begun until after payment of
the necessary final fee.

When the final fee is paid, there should also be sent,
DISTINCTLY AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE
OF THE INVENTION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF
ALLOWANCE (which is the date of this circular), DATE OF FILING,
and, if assigned, the NAMES OF THE ASSIGNEES.

If it is desired to have the patent issue to an ASSIGNEE
OR ASSIGNEES, an assignment containing a REQUEST to that effect,
together with the FEE for recording the same, must be filed in
this office on or before the date of payment of the final fee.

After issue of the patent, uncertified copies of the
drawings and specifications may be purchased at the price of
TEN CENTS EACH. The money should accompany the order. Postage
stamps will not be received.

The final fee will NOT be received from other than the
applicant, his assignee or attorney, or a party in interest as
shown by the records of the Patent Office.

NOTICE.— WHEN THE NUMBER OF CLAIMS ALLOWED IS IN EXCESS OF 20,
NO SUM LESS THAN \$30 PLUS \$1 ADDITIONAL FOR EACH
CLAIM IN EXCESS OF TWENTY CAN BE ACCEPTED AS THE
FINAL FEE.

Respectfully,

Thomas E. Robertson

Commissioner of Patents.

Cushman, Bryant, Darby & Cushman,
American Security Bldg.,
Washington, D. C.

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

UNCERTIFIED CHECKS WILL NOT BE ACCEPTED.

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MAIL DIVISION
FEB - 233
U.S. PATENT OFFICE

IN THE UNITED STATES PATENT OFFICE

Page 50

Albin H. Warth

MATERIAL FACING BOTTLE CAPS AND
METHOD OF MAKING SAME

Filed December 17, 1929

Serial No. 414,614

HON. COMMISSIONER OF PATENTS,

Sir:

Herewith final Government fee in the above application.

It is requested that this patent issue on the same
day with the following applications: Serial Nos. 492,546 and
527,012.

Respectfully,

Arthur B. Ryan & Carl F. Richman
Attorneys

February 2, 1933.

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FEB-233 680791 K-Check

30.00

MAIL DIVISION

FEB-233 FINAL FEE PAID TO THE COMMISSIONER OF PATENTS

U.S. PATENT OFFICE

(Be careful to give correct Serial No.)

Serial No. 414,614

Div. 50

INVENTOR:

Albin H. Warth

PATENT TO BE ISSUED TO

As per record

NAME OF INVENTION, AS ALLOWED:

Material Facing Bottle Caps and Method of making same

DATE OF PAYMENT:

February 2, 1933

FEE:

Final

DATE OF FILING:

December 17, 1929

DATE OF CIRCULAR OF ALLOWANCE:

February 2, 1933 (This patent should issue on Feb. 28.

with patents on appls. Ser. Nos. 492,546 and 527,012)

The Commissioner of Patents will please apply the accompanying fee as indicated above.

Cushman, Bryant, Darby & Cushman

Attorney.

SEND PATENT TO

Attorneys

Final fees will not be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office, NOR WILL THEY BE APPLIED IN PENDING APPLICATIONS.

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DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
WASHINGTON

Feb. 4

1933

Petition under **RULE 78:**

Application of

Serial No.

Invention:

This petition is referred to Examiner in charge of Division *50* in accordance with
Order No. 2898; Order No. 2901, 305 O. G., 447, and Notice of August 11, 1922.

File *Thomas E. Robertson*
Commissioner

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U.S. PATENT OFFICE

FEB 3 1933

ISSUED

11/C. Affidavit

IN THE UNITED STATES PATENT OFFICE

U. S. PATENT OFFICE

FEB 3-1933

ISLE DIVISION

Albin H. Warth,

MATERIAL FOR FACING BOTTLE CAPS
AND METHOD OF MAKING SAME,

Filed December 17, 1929,

Serial No. 414,614.

Div. 50.

AMENDMENT UNDER RULE 78

February 3, 1933.

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

We hereby authorize and request the entry of the following amendment under Rule 78, without withdrawing the application from issue:

IN THE SPECIFICATION

Page 1

Line 12, after the period insert the following paragraph:

This application is a continuation-in-part of my copending application Serial No. 494,201, filed November 7, 1930, the latter being a division of my application Serial No. 159,743, filed January 7, 1927, and now Patent No. 1,788,260, granted January 6, 1931.++

Line 19, after the period insert the following: ++Such a method is illustrated and described in my copending application Serial No. 492,546, filed October 31, 1930, as a division of my copending application Serial No. 360,895, filed May 5, 1929. As will be understood, this method of procedure is utilized in the production of caps of the "center spot" type, i.e. which are pro-

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vided with a facing or "center spot" of less diameter than the cap or cushion disc within the cap. It is to the production of material for the manufacture of caps of this "center spot", that the present invention more particularly relates, although in its broader aspects it is useful in the manufacture of caps having facings other than "center spots". A further illustration of a cap of the "center spot" type is to be found in the patent to McManus 1,330,066, granted May 4, 1920.++

✓ Same line (19), after "such" insert --"center spots" or--.

Line 23, after the period insert the following: ++As will be understood, facings of the "center spot" type are applied within the formed cap to the cushion liner and this method of manufacture presents problems quite distinct from the manufacture of caps having facings coextensive with the cushion liner, since facings coextensive with the cushion liner are ordinarily produced by adhesively uniting superimposed facing material and cushion liner material, both in sheet form, thereafter simply punching laminated discs of facing material and cushion material from the laminated sheet.++

Page 7

Line 15, after the period insert the following: ++The method involved in utilizing my invention need not be more fully described herein, since it is more fully disclosed and covered in my issued patent 1,788,260, granted January 6, 1931.++

IN THE CLAIMS

Add the following claim:

(C5) 134 As a new article of manufacture, highly flexible material in sheet or strip form for the spotting of cushion discs of caps with center spots of less diameter than the disc diameter consisting of a continuous layer of metallic foil coated on one side with an exposed continuous layer of waterproof, flexible, and acid resistant adhesive adherent to the foil and adapted to adhere to a cork disc, said adhesive being substantially non-tacky at room temperature but fusible upon the application of heat and substantially impervious to moisture whereby spots may be punched from the strip and united to the cushion discs of caps by the mere application of heat and pressure.++

REMARKS

The foregoing claim is submitted for the purpose of transferring from the copending allowed application Serial No. 494,201, the first of the two (2) claims allowed therein. The single claim transferred, and numbered 13 above, is a species claim subordinate to allowed claim 12 in this application. As stated, this application is a continuation-in-part of applicant's patent No. 1,788,260, granted January 6, 1931, and such part includes the subject matter of claims 12 and 13 herein.

The specification has been amplified somewhat in a purely descriptive manner to indicate the particular products or field of this invention and reference has been made to applicant's copending case (allowed) Serial No. 429,546, as illustrating the center spot type of cap to which this invention relates in its more specific aspects.

ENTRY RECOMMENDED
UNDER RULE 78.

JJD:M

Respectfully,

Attorneys for Applicant.

ENTRY APPROVED

ACTING COMMISSIONER OF PATENTS

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FEB 4 1933

ISSUE DIVISION

IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

MATERIAL FOR BOTTLE CAPS
& METHOD OF MAKING SAME,

Filed December 17, 1929,

Serial No. 414,614.

Div. 50.

CITY OF BALTIMORE: SS.

Albin H. Warth, whose application for Letters Patent for Improvements in Material for Bottle Caps & Method of Making Same, was filed December 17, 1929, Serial No. 414,614, being duly sworn, deposes and says that he has read the amendment, copy of which is attached, and that the subject matter thereof was part of his invention, was invented before he filed his original application, above identified, for such invention, and that deponent does not know and does not believe that the same was known or used before his invention, or patented or described in a printed publication in any country more than two years before his application, or patented in a foreign country on an application filed by him or his legal representatives or assigns more than twelve months before his application, or in public use or on sale in this country for more than two years before the date of his application, and that the same has not been abandoned.

Albin H. Warth

Subscribed and sworn to before me this 3rd day of
February, 1933.

(SEAL).

Harold H. Smith
NOTARY PUBLIC

MY COMMISSION EXPIRES JAN. 1, 1934

IN THE UNITED STATES PATENT OFFICE

Albin H. Warth,

MATERIAL FOR FACING BOTTLE CAPS
AND METHOD OF MAKING SAME,

Filed December 17, 1929,

Serial No. 414,614.

Div. 50.

AMENDMENT UNDER RULE 78

February 3, 1933.

Hon. Commissioner of Patents,
Washington, D.C.

Sir:

We hereby authorize and request the entry of the following amendment under Rule 78, without withdrawing the application from issue:

IN THE SPECIFICATION

Page 1

Line 12, after the period insert the following paragraph:

--This application is a continuation-in-part of my copending application Serial No. 494,201, filed November 7, 1930, the latter being a division of my application Serial No. 159,743, filed January 7, 1927, and now Patent No. 1,788,260, granted January 6, 1931.--

Line 19, after the period insert the following: --Such a method is illustrated and described in my copending application Serial No. 492,546, filed October 31, 1930, as a division of my copending application Serial No. 360,895, filed May 5, 1929, As will be understood, this method of procedure is utilized in the production of caps of the "center spot" type, i.e. which are pro-

Duplicate

vided with a facing or "center spot" of less diameter than the cap or cushion disc within the cap. It is to the production of material for the manufacture of caps of this "center spot", that the present invention more particularly relates, although in its broader aspects it is useful in the manufacture of caps having facings other than "center spots". A further illustration of a cap of the "center spot" type is to be found in the patent to McManus 1,339,066, granted May 4, 1920.--

Same line (19), after "such" insert --"center spots" or--.

Line 23, after the period insert the following: --As will be understood, facings of the "center spot" type are applied within the formed cap to the cushion liner and this method of manufacture presents problems quite distinct from the manufacture of caps having facings coextensive with the cushion liner, since facings coextensive with the cushion liner are ordinarily produced by adhesively uniting superimposed facing material and cushion liner material, both in sheet form, thereafter simply punching laminated discs of facing material and cushion material from the laminated sheet.--

Page 7

Line 15, after the period insert the following: --The method involved in utilizing my invention need not be more fully described herein, since it is more fully disclosed and covered in my issued patent 1,788,260, granted January 6, 1931.--

IN THE CLAIMS

Add the following claim:

--13. As a new article of manufacture, highly flexible material in sheet or strip form for the spotting of cushion discs of caps with center spots of less diameter than the disc diameter consisting of a continuous layer of metallic foil coated on one side with an exposed continuous layer of waterproof, flexible, and acid resistant adhesive adherent to the foil and adapted to adhere to a cork disc, said adhesive being substantially non-tacky at room temperature but fusible upon the application of heat and substantially impervious to moisture whereby spots may be punched from the strip and united to the cushion discs of caps by the mere application of heat and pressure.--

REMARKS

The foregoing claim is submitted for the purpose of transferring from the copending allowed application Serial No. 494,201, the first of the two (2) claims allowed therein. The single claim transferred, and numbered 13 above, is a species claim subordinate to allowed claim 12 in this application. As stated, this application is a continuation-in-part of applicant's patent No. 1,788,260, granted January 6, 1931, and such part includes the subject matter of claims 12 and 13 herein.

The specification has been amplified somewhat in a purely descriptive manner to indicate the particular products or field of this invention and reference has been made to applicant's copending case (allowed) Serial No. 429,546, as illustrating the center spot type of cap to which this invention relates in its more specific aspects.

Respectfully,

JJD:M

Attorneys for Applicant.

1111

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Stn. 50

Room 4701

221-a

Address only
"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name

DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
WASHINGTON

Paper No.

All communications respecting this
application should give the serial number,
date of filing, and name of
the applicant

February 6, 1933

Applicant: Albin H. Barth

Ser. No. 414,614
Filed Dec. 17, 1929
For Material for Facing Bottle
Caps etc.

Cushman, Bryant, Darby & Cushman,
American Security Bldg.,
Washington, D. C.

The amendment proposed has been entered under Rule 78.

Thomas E. Robertson

Commissioner of Patents.

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PAGE

Feb. 28, 1933.

A. H. WARTH

1,899,782

MATERIAL FOR FACING BOTTLE CAPS AND METHOD OF MAKING SAME

Filed Dec. 17, 1929

Fig. 1.

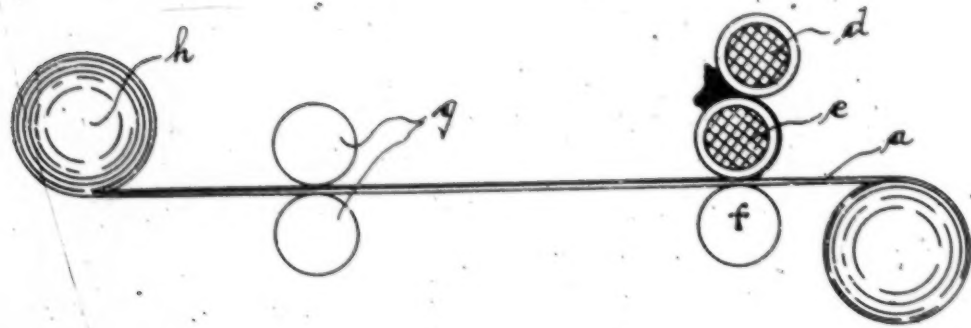


Fig. 2.



Fig. 3.

Alvin H. Warth

INVENTOR

BY *Paul J. Warth*

his ATTORNEY.

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UNITED STATES PATENT OFFICE

ALBIN H. WARTH, OF BALTIMORE, MARYLAND, ASSIGNOR TO CROWN CORK & SEAL COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

MATERIAL FOR FACING BOTTLE CAPS AND METHOD OF MAKING SAME

Application filed December 17, 1929. Serial No. 414,614.

My invention relates to material for facing bottle caps and method of making same, and more particularly to strip material having applied to one face thereof a coating of gutta-percha.

This application is a continuation-in-part of my copending application Serial No. 94,201, filed November 7, 1930, the latter being a division of my application Serial No. 59,743, filed January 7, 1927, and now Patent No. 1,788,260, granted January 6, 1931.

Heretofore, facing material for bottle caps has been secured in position within the caps by means of gutta-percha tissue. In forming the facing disks and applying them to the caps, the practice has been to cut disks from superimposed strips of facing material and gutta-percha tissue, deposit the disks in the cap and apply heat for the purpose of fusing the gutta-percha tissue. Such a method is illustrated and described in my copending application Serial No. 492,546, filed October 31, 1930, as a division of my copending application Serial No. 360,895, filed May 5, 1929. As will be understood, this method of procedure is utilized in the production of caps of the "center spot" type, i. e. which are provided with a facing or "center spot" of less diameter than the cap or cushion disk within the cap. It is to the production of material for the manufacture of caps of this "center spot" type, that the present invention more particularly relates, although in its broader aspects it is useful in the manufacture of caps having facings other than "center spots". A further illustration of a cap of the "center spot" type is to be found in the patent to McManus 1,339,066, granted May 4, 1920. One difficulty in thus applying such "center spots" or disks to caps has arisen from the use of superimposed unconnected strips of facing material and of gutta-percha, the two strips being simultaneously fed from the same roll in relation to the punch of the face applying machine. As will be understood, disks of the "center spot" type are applied within the formed cap to the cushion liner and this method of manufacture presents problems quite distinct from the manufacture of caps having facings coextensive with the cushion liner, since facings coextensive

with the cushion liner are ordinarily produced by adhesively uniting superimposed facing material and cushion liner material, both in sheet form, thereafter simply punching laminated discs of facing material and cushion material from the laminated sheet. 55

With this condition, there is not only difficulty in feeding the strip, but in cutting the gutta-percha with a clean sharp edge so as to ensure the binding stratum of gutta-percha being co-extensive in area with the facing disk. The gutta-percha binding stratum in such disks is intended not only to act as a cement, but also as a non-absorbent, gas impervious medium for avoiding possibility of the contents of a bottle getting between the facing disk and the material of the cap, either the metal shell itself or a cushion disk of cork or composition cork. 60

Furthermore, when thus using superimposed strips of the facing material and of gutta-percha tissue, it was essential, during the application of the disk to the cap, to bond the gutta-percha to both the material of the cap and the facing material. 65

It is desirable, in the use of facing disks of the character above referred to, that the gutta-percha stratum be as thin as possible, and yet be continuous throughout the entire area of the facing disk, and particularly that it be uninterrupted about the edge of this disk, since at this point the disk should be firmly bonded so as to effectively seal the joint about the edge of the facing disk. When cutting and applying the disks of paper and gutta-percha, there is no means of ascertaining whether the desired conditions are present in the completed cap. Consequently, there is always likelihood of imperfectly faced caps being produced. 70 75 80 85 90

With the above conditions in mind, I have provided material, in strip form, for facing bottle caps, in which one surface of the strip is provided with a firmly adherent, continuous thin facing of gutta-percha, thus avoiding all necessity for assembling strips of facing material and of gutta-percha tissue preparatory to their use in the bottle cap facing machine, and all of the disadvantages growing out of this practice. 95 100

In the strip material of my invention, a very thin stratum of gutta-percha is evenly distributed upon one face of a strip of facing material. The gutta-percha is not only
5 firmly bonded to this material, but is forced into the surface grain thereof, and has a smooth surface finish of sufficient thickness to form the desired firm bond between a disk cut from the strip and the material of the
10 cap to which such disk is cemented.

The manner of applying the gutta-percha to the facing strip is such as to ensure substantial uniformity in the condition of the gutta-percha throughout the strip by reason
15 of the fact that those impurities or imperfections resulting from the working of gutta-percha in a mill will develop only along the edges of the facing material, where they may either be removed by trimming wide strips
20 of the material, or will come within the wastage of narrow strips when cutting disks from such strips.

Furthermore, gutta-percha tissue must be of a thickness to have sufficient inherent
25 strength to permit of its being stripped from a roll in a mill for working same, and to admit of its being cut to the desired width and to be handled in the re-winding and the disk applying, machines, and during the
30 process of its production it has more or less of a longitudinally extending grain as distinguished from its normal granular formation.

In applying the gutta-percha to the fibrous or metallic facing material in accordance
35 with my invention, the thickness of the gutta-percha is determined solely by that required to secure the desired intermediate stratum of the gutta-percha in the finished cap.

In the application of heat, when bonding the facing material to the cap, when utilizing
40 gutta-percha tissue, a tendency of the gutta-percha is to break up into slightly isolated, small globules, thus interrupting the continuity of the bonding stratum. Whether
45 this is due to irregularities in the surface of the facing strip, or to a shrinkage of the gutta-percha tissue when fused, I have been unable to determine. In the strip of my invention,
50 however, the gutta-percha is thoroughly distributed throughout one face of the facing material, and the above conditions do not develop in the subsequent handling of the strips.

So far as the method of producing the strip is concerned, it is such that the effective
55 distribution of the gutta-percha throughout the entire area of the facing material is assured, and this condition cannot be disturbed as a result of the cutting of disks from this material when in strip form. Furthermore, the gutta-percha surface may be thoroughly inspected while producing the
60 strip material, so that any imperfect prod-

uct may be discarded before it reaches the disk applying machine.

It is desired to note that the surface of the strip to which the gutta-percha is not applied is always a highly polished surface, whether
it be a varnish fibrous material such as paper, or a metal foil, so that the gutta-percha surface will not adhere thereto. By applying the gutta-percha directly to the surface of the paper and firmly bonding it there is no
likelihood of difficulties arising as a result of the separation of the gutta-percha from the facing strip during the unwinding operation, either as a result of slight adherence, from
suction or otherwise, such as frequently occurs when using the superimposed strips of the facing material and of gutta-percha tissue.

The invention consists primarily in material for facing bottle caps consisting of a facing strip of non-absorbent, gas impervious and acid resisting material, having bonded thereto, throughout one face thereof, a thin surfacing of gutta-percha; and in such other
novel characteristics, and in the novel steps and practices of producing same, all as hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawing,

Fig. 1 is a diagrammatic showing of the method of producing the facing material of the invention;

Fig. 2 is a longitudinal view, partly in cross section, of a fragmentary portion of said material; and

Fig. 3 is a face view thereof with a portion of the facing strip broken away.

Like letters refer to like parts throughout the several views.

In the accompanying drawing, the thickness dimensions are all greatly exaggerated, the thickness of the facing strip being less than five thousandths of an inch, and that of the gutta-percha surfacing, less than two thousandths of an inch.

In the embodiment of the invention shown in the drawing, the facing strip is composed of what is known as express paper which is a hard, tough paper having little absorptive properties. The properties inherent to the paper, however, are such, if properly finished, as to adapt it for use as facing material for bottle caps, although it is extremely difficult to satisfactorily cement such paper to the metal shell or cork cushion of such a closure.

In order to impart to one surface of the paper only the desired properties which will result in this strip presenting toward the contents of a bottle, a surface which is non-absorbent, gas impervious and acid resisting, I give a finish to this surface consisting of a coating of a varnish having the desired properties, and which includes therein resins.

China-wood oil, a drier and a plasticizer. This surface finish, in addition to having the properties above described, will also be sufficiently flexible to avoid the formation of cracks, or impart to the paper strip as a whole, a degree of brittleness which might result in the formation of such cracks or seams in the paper as would destroy the surface finish and permit the contents of the bottle to attack the body of the paper.

While express paper is a water finish paper, other similar papers may be used such as sulfite paper or bleached kraft paper.

The varnish finish coating above referred to is indicated at *b* in the drawing, this coating being very thin, merely sufficient to provide a continuous surface upon one side of the strip. The other side of the paper strip presents the normal finish of the paper, and has firmly bonded thereto a thin coating *c* of gutta-percha, covering the entire face of the strip and presenting a smooth continuous surface, having a general granular character resulting from the manner of applying same to the paper.

It is obvious that in the handling of the completed strip of facing material the gutta-percha facing *c* will be incapable of stretch or distortion because of its firm adherence to the non-elastic paper strip *a*. As compared with gutta-percha tissue, the quantity of gutta-percha required to secure the desired bonding action, when assembling the facing disk in a cap, is somewhat reduced.

In cutting disks from a strip of the material, there is no tendency toward mutilation of the gutta-percha by reason of possible drag in the cutting die, and each disk, as delivered from the die to within a cap, will present a continuous uninterrupted gutta-percha surface upon the disk, so as to ensure, by the subsequent application of heat and pressure, a bond between the disk and the cap co-extensive in area with the disk. The method involved in utilizing my invention need not be more fully described herein, since it is more fully disclosed and covered in my issued Patent 1,788,260, granted January 6, 1931.

Since, in applying the gutta-percha to the paper, the condition are such as to completely fill all surface pores, it is obvious that during the bonding action, in the facing machine there is no tendency of the gutta-percha, during and after fusing, leaving exposed, minute openings at any point of the surface of the paper.

By reason of the thinness of the gutta-percha facing *c*, there is no tendency toward the expression of any of the gutta-percha from between the facing disk and the portion of the cap to which it is applied.

The possibility of securing a clean cut by the dies for forming the disks, both as to the paper and as to the gutta-percha facing *c*,

ensures an effective bond entirely about the edge of the disk, presenting a continuous barrier of non-absorptive, gas impervious and acid resisting material at the space between the disk and the cap which will effectively prevent the seepage of gas or fluids in a bottle between the disk and the portion of the cap to which it is applied. 70

In Fig. 1 of the drawing, I have illustrated the method of making the strip material of my invention. In the practice of this method, I use an ordinary mill with its heated rollers *d* and *e*. Operative in relation to the lower roller *e* is a backing roller *f*. A strip of the paper or other material *a* is drawn between the rollers *e* and *f* by means of the feed rollers *g*, by which it is passed to a re-wind mechanism indicated at *h*. 75 80

The method contemplates the feeding of the strip *a* between a backing roller *f*, and between one of the heated rolls of a gutta-percha mill *e*, thus applying a thin coating of gutta-percha while hot, to one surface only of the paper strip *a*, the gutta-percha hardening from its exposure to the surrounding temperature before engagement by the feed rollers *g*. 85 90

In feeding the strip *a* in the manner above described, the varnish surface thereof is presented downwardly, this surface having been applied to the paper prior to the feeding of the strip in the mill. In this manner a very thin coating of gutta-percha may be applied to one face of the strip *a*, to which it will firmly adhere while said strip is passing between the rollers *e* and *f*. 95 100

The thickness of the surface coating may be controlled by adjustment of the rollers *d* and *e*, and also by adjustment of the roller *f* in relation to the latter. In this manner, the strip *a* will have applied thereto a surfacing of gutta-percha which will be evenly distributed throughout the entire surface of the strip, and will present a substantially smooth exterior surface, notwithstanding surface irregularities in the paper itself. The smooth polished surface *c* will avoid any possibility of a surface stratum *c* adhering to the adjoining stratum *b* after the strip is re-wound and while it is being unwound in the disk applying machine, since the gutta-percha will not become tacky under normal factory temperatures. 105 110 115

It is preferable to apply the gutta-percha in the manner above described, to wide strips of paper which are cut into narrower strips of the desired width for use with bottle caps of different diameters. 120

The method described has been found to be applicable to the coating of paper strips with gutta-percha, and it is also applicable to coat metal foil, but in coating foil it is desirable to previously prepare, as by the application of a coating, one surface of the foil to receive the gutta-percha and permit it to adhere 125 130

thereto with sufficient strength to permit a continuing application of gutta-percha to a strip as required by the method of my invention.

5 Facing material embodying the invention possesses the advantages that a substantially uniform and complete distribution of the gutta-percha throughout each disk cut from a strip, is assured. The additional labor of associating a strip of gutta-percha tissue and a strip of facing material is avoided, and higher speeds may be attained in the facing disk applying machine. By the method of applying fused gutta-percha to a facing strip, there is considerable saving, not only by the reduction in the amount of gutta-percha required, as compared with the use of gutta-percha tissue, but the preparation of the strips for use in the disk applying machines is very much reduced, and a more uniform quality in the bond between the disks and the caps is also assured.

It is preferable for the bottling of many liquids to employ facing material composed of paper of the general character herein described, as compared with the use of metal foils.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. As a new article of manufacture, material for facing bottle caps consisting of a paper strip, having applied to one surface thereof a surface coating of varnish consisting of resin, China-wood oil, a drier and a plasticizer, whereby said surface of the paper is made non-absorbent, gas impervious and acid resisting, and having bonded thereto, throughout the other surface thereof, a thin surfacing of gutta-percha.

2. As a new article of manufacture, bottle cap liner material in strip form comprising paper having a high gloss and having a coating of varnish on one surface of the paper and bonded to the other surface thereof a coating of gutta percha.

3. As a new article of manufacture, paper having a high gloss and having a coating of varnish on one surface of the paper and a coating of gutta percha on the other surface thereof.

4. As a new article of manufacture, bottle cap spotting material in strip form comprising express paper having a coating of varnish on one surface and bonded to the other surface thereof a coating of gutta percha.

5. As a new article of manufacture, bottle cap spotting material in strip form comprising bleached kraft paper having a coating of varnish on one surface and bonded to the other surface thereof a coating of gutta percha.

6. As a new article of manufacture, laminated bottle cap spotting material in strip form comprising hard, tough paper having

relatively low absorptive properties, a coating of resistant varnish on one surface of the paper and bonded to the other surface a coating of heat fusible, waterproof and flexible adhesive.

7. As a new article of manufacture, laminated bottle cap spotting material in strip form comprising hard, tough paper having relatively low absorptive properties, a coating of resistant varnish on one surface of the paper and bonded to the other surface a coating of gutta percha.

8. As a new article of manufacture, highly flexible material in sheet or strip form adapted for the spotting of cushion discs of crown caps with center spots of less diameter than the disc diameter by the mere application of heat and pressure consisting of a continuous layer of material selected from a group consisting of metallic foil and varnish coated tough paper having relatively low absorptive properties, said layer being coated on one side with an exposed continuous layer of waterproof, flexible, and acid resistant adhesive adherent to the foil and adapted to adhere to a cork disc, said adhesive being substantially nontacky at room temperature but fusible upon the application of heat and substantially impervious to moisture whereby spots may be punched from the strip and united to the cushion discs of caps by the mere application of heat and pressure.

9. As a new article of manufacture, highly flexible material in sheet or strip form for the spotting of cushion discs of caps with center spots of less diameter than the disc diameter consisting of a continuous layer of metallic foil coated on one side with an exposed continuous layer of waterproof, flexible, and acid resistant adhesive adherent to the foil and adapted to adhere to a cork disc, said adhesive being substantially non-tacky at room temperature but fusible upon the application of heat and substantially impervious to moisture whereby spots may be punched from the strip and united to the cushion discs of caps by the mere application of heat and pressure.

In witness whereof I have hereunto affixed my signature, this 11th day of December 1929.

ARTHUR H. WARTH.

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C. E. McMANUS.

FACING MATERIAL FOR CORK OR OTHER DISKS FOR BOTTLE CAPS.

APPLICATION FILED MAY 9, 1916.

1,213,926.

Patented Jan. 30, 1917.



Attest:
E. M. Jones

Charles E. McManus Inventor:
by *Frank O. Wentworth*
his Atty.

UNITED STATES PATENT OFFICE.

CHARLES E. McMANUS, OF NEW YORK, N. Y.

FACING MATERIAL FOR CORK OR OTHER DISKS FOR BOTTLE-CAPS.

1,213,926.

Specification of Letters Patent.

Patented Jan. 30, 1917.

Application filed May 9, 1916. Serial No. 96,304.

To all whom it may concern:

Be it known that I, CHARLES E. McMANUS, a citizen of the United States, residing at the borough of Manhattan, city, county, and State of New York, have invented certain new and useful improvements in Facing Material for Cork or other Disks for Bottle-Caps, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to facing material for cork or other disks for bottle caps and more particularly to material of this kind wherein the face presented toward the contents of the bottle is a metal foil.

Heretofore cork or other disks for bottle caps have had the central portion thereof provided with a facing disk to protect the cork or other disk from the action of the contents of the bottle, and prevent contamination of the contents of the bottle, through contact with said cork or other disk. Various types of facing disks have been used, and have been applied to the cork or other disks, in different manners.

It has been attempted to use metal foil disks, but such have proven impracticable for the reason that it has been found extremely difficult to provide a stable bond between the cork or other disk and the metal foil disk, such being of vital importance to a disk faced with metal foil owing to the tendency of the agitators in the hopper of the bottling machine to separate the foil from the cork or other disk, or to raise the edge thereof therefrom. It has been proposed to slot the cork or other disk and form a cup of the metal foil and seat the rim of the cup in said slot, but this has not been found satisfactory, since it weakens the cork or other cushion and tends toward the formation of channels or leaks, through the slot. Furthermore, metal foil has practically no elasticity and low tensile strength and consequently in view of the difficulty of securing a permanent bond, coupled with the lack of elasticity of the foil preventing its yielding with the cork or other cushion disk, the difficulty of producing a workable metal faced cushion disk is practically insurmountable where metal alone is used for the facing material. In addition to the

foregoing it is necessary to apply facing disks to the cork or other cushion disks so rapidly that they can be handled commercially only by machinery and metal foil alone cannot be fed satisfactorily in a machine and it is practically impossible to cut disks therefrom as required which will present a clean sharp edge.

By my invention, I am enabled to provide a facing material utilizing much thinner metal foil than is possible when using the metal foil alone, for the facing, the facing material being so constituted that when applied to the cork or other disk, it will be firmly bonded thereto and not liable to displacement through the contact therewith of the agitators in the hoppers of the capping machine. I secure these results by providing a flexible reinforcement or backing for the metal foil before it is applied to the cork or other disk, the metal foil being firmly bonded to this reinforcing backing and the backing being firmly bonded to the cork or other disk. This manner of forming the material permits the binding medium between the metal foil and the reinforcement or backing to firmly set before the facing disk is applied to the cork or other disk and permits greater uniformity in the distribution of the binding medium so as to avoid any weak spots which might tend toward the separation of the foil and its backing. This binding medium may also be selected with a view to its non-absorbent, gas impermeable property.

The material when ready for application to the cork or other disk is sufficiently rigid by reason of the binder between the metal foil and its backing, to insure a clean cutting of the disks, and the accurate feeding of the material in the machine. I also contemplate providing sufficient slack in the metal foil to permit that stretch incidental to the application of a cap to a bottle.

The invention consists in a facing material for cork or other disks for bottle caps, consisting of metal foil provided with a reinforcement or backing of fibrous material having one surface thereof gummed, and the other surface thereof firmly bonded to said metal foil by a stratum of a binding medium and in such other novel features of construction and combination of parts as are

hereinafter set forth and described and more particularly pointed out in the claims hereto appended.

In the accompanying drawings, I have shown a section of a strip of facing material embodying my invention.

In making the material of the invention, I preferably employ tin foil *a* which may be of a thickness no greater than .001 of an inch. This foil is backed or reinforced with fibrous material *b*, preferably paper, the foil being firmly bonded to the paper by a binding medium which is applied to the paper or other backing in a thin stratum *c* so as to insure uniformity of the bond between all parts of the adjoining surface of the foil and its backing. The paper or other backing has the surface thereof other than that to which the foil is to be or has been applied, gummed as indicated at *d* so as to permit the application of the facing to the cork or other disks by the application of a damping material to the face of the cork or other disk and thus facilitate the feeding and application of the casing material to the cork or other disk. By using a fibrous reinforcement or backing, the gum and the binding medium between the backing and the foil may readily penetrate this reinforcing backing material, to an extent to minimize any tendency of the facing disk to separate from the cork or other disk, or the foil to separate from said reinforcing or backing disk.

There are a number of binding mediums which may be used, such as sodium silicate, which will form a firm bond between the foil and the paper. Binding mediums of this type have the further advantage that they are insoluble when once set and form a continuous film which is substantially impermeable to gases. Since flexibility in the facing material is desirable, when I use sodium silicate, I mix with it a small percentage of glycerin in order to impart some flexibility to the stratum of binding material. I do not desire to limit myself to the use of sodium silicate, however, as there are many equivalent binding materials which will have the desired effect of insuring a permanent bond between a metal foil and a backing or reinforcement of paper or other fibrous material.

By applying the foil to the backing material and cutting the disks therefrom, I secure two distinct advantages; first, the binding medium between the foil and the backing or reinforcing material may be allowed to set before the disks are cut therefrom or are applied to the cork or other disk, thus securing a firm bond between the foil and its backing which it is impossible to obtain when the binding medium is applied to the foil, or the cork or other disk as the facing disk is applied thereto; second, the binding

medium after it is set, will impart sufficient rigidity or crispness to the facing material to insure a clean sharp edge upon the facing disks when they are cut from a strip of the facing material.

In addition to the foregoing, I also secure the advantage that the paper or other reinforcing or backing material may have a suitable gum applied thereto prior to the feeding of the material in a machine, so that it is merely necessary to apply a damping medium to the cork or other disk to secure a firm bond between the reinforced metal foil disk and the cork or other disk. If desired the foil may be crinkled by being run between knurled rollers to produce sufficient slack therein to permit that stretch of the facing material incidental to the application of a cap to a bottle.

It is not my intention to limit the invention to the precise manner of assembling the facing material as herein described, it being apparent that the binding medium employed, as specifically referred to, is not material to the invention considered in its broader aspects.

Having described the invention, what I claim as new and desire to have protected by Letters Patent is:—

1. A facing material for cork or other disks for bottle caps consisting of metal foil provided with a reinforcement or backing of fibrous material having one surface thereof gummed and the other surface firmly bonded to said metal foil by a stratum of a binding medium.

2. A facing material for cork or other disks for bottle caps consisting of metal foil having a paper reinforcement or backing, one surface of said paper being gummed and the other surface thereof being firmly bonded to said metal foil by a stratum of a binding medium.

3. A facing material for cork or other disks for bottle caps consisting of metal foil having a paper reinforcement or backing, one surface of said paper being gummed and the other surface thereof being firmly bonded to said metal foil by a stratum of a binding medium, said paper reinforcement or backing being relatively thicker than said metal foil.

4. A facing material for cork or other disks for bottle caps consisting of metal foil provided with a reinforcement or backing of fibrous material having one surface gummed and the other surface firmly bonded to said metal foil by a stratum of a substantially non-absorbent, gas-impervious binding medium having relatively less flexibility than said metal foil or its backing.

5. A facing material for cork or other disks for bottle caps consisting of tin foil having a paper reinforcement or backing, one surface of said paper being gummed

and the other surface thereof being firmly bonded to said tin foil by a stratum of substantially non-absorbent gas impervious binding medium having relatively less flexibility than said tin foil or said paper, said paper being relatively thicker than said tin foil.

6. A facing material for cork or other disks for bottle caps consisting of metal foil provided with a reinforcement or backing of fibrous material having one surface thereof gummed and the other surface firmly bonded to said metal foil by a stratum of a

binding medium, said metal foil being crinkled or indented to provide slack therein 15 whereby said foil will be relieved from tensile strains when the bottle cap is applied to a bottle.

In witness whereof I have hereunto affixed my signature in the presence of two subscribing witnesses, this 8th day of May, 1916. 20

CHARLES E. McMANUS.

Witnesses:

JUDITH PARDEL,
CLARICE FRANCK.

1122

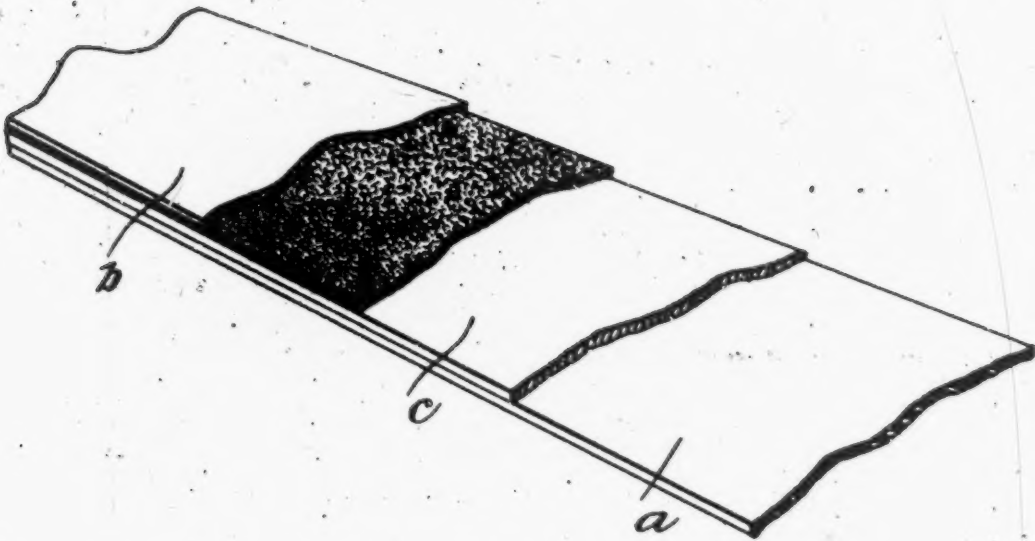
Aug. 9, 1927.

C. E. McMANUS

1,638,541

CUSHION MATERIAL FOR BOTTLE CLOSURES

Filed July 6, 1922



Charles E. McManus INVENTOR

BY *Francis P. Whitmore*

his ATTORNEY.

Patented Aug. 9, 1927.

UNITED STATES PATENT OFFICE.

CHARLES E. McMANUS, OF NEW YORK, N. Y.

CUSHION MATERIAL FOR BOTTLE CLOSURES.

Application filed July 6, 1922. Serial No. 573,178.

My invention relates to cushion material for bottle closures, and more particularly to material adapted to be used in lieu of the natural, or composition, cork disks now commonly used in closures of the type generally known as "Crown caps."

The main object of my invention is to provide cushion material embodying therein in a unitary structure in strip form, material having sufficient resiliency to permit the formation of a tight seal when applied under pressure to the mouth of a bottle; sufficient rigidity to permit disks to be cut therefrom and applied to the metal shell of a closure by a closure assembling machine, and a facing impermeable to gas and liquid, to be presented toward the contents of a bottle, said facing having sufficient flexibility or compressibility to yield with the cushioning portion of the material as a closure containing same is applied to a bottle in the usual manner.

The cushion material embodying my invention, preferably consists of a plurality of superimposed laminae firmly bonded together by means of suitable binders, adhesives or glues, one outer lamina being soft vulcanized rubber or rubber substitute, and the other outer lamina being of an oil or wax fibrous material such as paper, an intermediate lamina preferably being provided for the purpose of giving additional body to the material and ensuring a better bonding of the rubber or rubber substitute lamina and the oil or wax treated lamina with relation to each other in the strip material of which they form parts.

The invention consists primarily in cushion material for bottle closures embodying therein, in a unitary structure and in strip form, a lamina of resilient material and a facing lamina permanently united thereto and consisting of a liquid and gas impervious flexible fibrous material; and in such other novel characteristics as are hereinafter set forth and described and more particularly pointed out in the claims hereto appended.

In the accompanying drawing, I have illustrated in perspective a short section of a strip of cushion material embodying my invention, broken away to disclose the different laminae.

In the embodiment of my invention shown in the drawing, the cushion material is composed of one outer or cushion lamina *a* of soft vulcanized rubber or of a resilient rub-

ber substitute, and the other outer lamina or facing material *b* composed of suitable fibrous material, such as paper so treated with oil or wax as to be substantially impermeable by gas and liquid such as are ordinarily present in different beverages. Said cushion lamina *a* and said facing lamina *b* are united preferably by means of an intermediate lamina *c* of fibrous material, preferably untreated paper being used, since this lamina never contacts with the contents of a bottle and a better bond may be secured when this intermediate stratum is absorptive and permeable by the binder, adhesive or glue used in uniting the cushion and facing laminae with relation to each other through said intermediate lamina.

The cushion lamina *a* may if desired be in the form of ordinary friction rubber applied to the lamina *c*, or may be bonded thereto by means of any suitable binder, adhesive or glue, as desired.

By reason of the impregnation of the lamina *b* with oil or wax and of the necessity for securing flexibility in the binder, adhesive or glue used for uniting the lamina *b* to the intermediate lamina *c*, I preferably provide a stratum of a binder, adhesive or glue such as an asphaltum cement which has the characteristic of being moisture repellant, between the laminae *b* and *c*, although any other flexible adhesive may be used in lieu thereof.

In the production of cushion material embodying my invention, the various laminae are independently fed and collected, the adhesive being applied thereto during the feeding operation, said strips when collected, being forced together under pressure and preferably in an elevated temperature so as to ensure a tight continuous joint between the adjacent laminae.

The finished strip as a whole, will possess the necessary thickness, resiliency and flexibility to permit disks cut therefrom to be used instead of cork disks in bottle closures, and possesses the further advantage that it may be used in a machine in strip form and the cushion disks cut therefrom and applied directly to the metal shell, each disk being free from surface voids of a magnitude which will not be closed as a result of the application of pressure to the closure in applying it to a bottle.

Ordinarily the thickness of the material will be approximately one-half that of the

ordinary cushion disk, it being possible with this material to cup a disk when applying it to a shell and to fold or bend the edge of the disk upon itself so as to secure an edge seal about the mouth of a bottle of greater thickness than the portion of the cushion with which the top of the mouth contacts. This thickened portion will of necessity have relatively greater resiliency than the portion with which the top of a bottle contacts, so that a tight seal may be effected at the curvature at the top of the bottle as well as at the high point of the side of the bead. Furthermore, the cushion lamina *a* when a disk is cupped and folded as described, will engage both the bead of a bottle and the material of the shell of the closure, which is a highly desirable condition in such closures.

In the production of closures embodying the cushion material of my invention, the lamina *a* will be cemented to the shell of the closure, the arrangement of this lamina, however, being such that under no circumstances can moisture or gases from the bottle penetrate through the adhesive securing the material to the shell, since the rubber or rubber substitute is immune to the action of water, and chemicals or gases ordinarily found in beverages, and furthermore when cupped will vent such matter to atmosphere if it escapes through the seal.

It is not my intention to limit the invention to the exact adhesives or glues used, since there is a wide range of selection in such materials as well as in the fibrous materials in the laminae *b* and *c*, nor to the method of producing the material.

I have found that the lamina *b* may be made of a special well known commercial product consisting of an oil impregnated paper known in the art as insulating paper, which may be readily handled and bonded while possessing the desired non-absorptive and gas impervious properties.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. Cushion material for bottle closures embodying therein, in a unitary structure and in strip form, a lamina of resilient ma-

terial, a facing lamina consisting of liquid and gas impervious fibrous material, an intermediate lamina of fibrous material bonded to said resilient material, and a stratum of moisture resisting cement bonding said intermediate and said facing lamina.

2. Cushion material for bottle closures embodying therein, in a unitary structure and in strip form, a lamina of soft vulcanized rubber, a facing lamina consisting of liquid and gas impervious fibrous material, an intermediate lamina of fibrous material bonded to said lamina of soft vulcanized rubber, and a stratum of moisture resisting cement bonding said intermediate and said facing lamina.

3. Cushion material for bottle closures embodying therein in a unitary structure and in strip form, a lamina of resilient material, a facing lamina consisting of a liquid and gas impervious flexible fibrous material, and an intermediate lamina of absorptive, fibrous material readily permeable by a binding material, whereby the uniting of such other lamina is secured through the medium of said intermediate lamina.

4. Cushion material for bottle closures embodying therein in a unitary structure and in strip form, a lamina of soft vulcanized rubber, a facing lamina consisting of a liquid and gas impervious flexible fibrous material, and an intermediate lamina of absorptive, fibrous material readily permeable by a binding material, whereby the uniting of such other lamina is secured through the medium of said intermediate lamina.

5. Cushion material for bottle closures embodying therein in a unitary structure and in strip form, a lamina of soft vulcanized rubber, a facing lamina consisting of paper treated so as to be substantially impermeable by gases and liquids, and an intermediate lamina of non-treated paper, bonded respectively to said rubber lamina and said treated paper lamina, whereby the uniting of said other lamina is secured through the medium of said intermediate lamina.

In witness whereof I have hereunto affixed my signature, this 23rd day of June, 1922.

CHARLES E. McMANUS.

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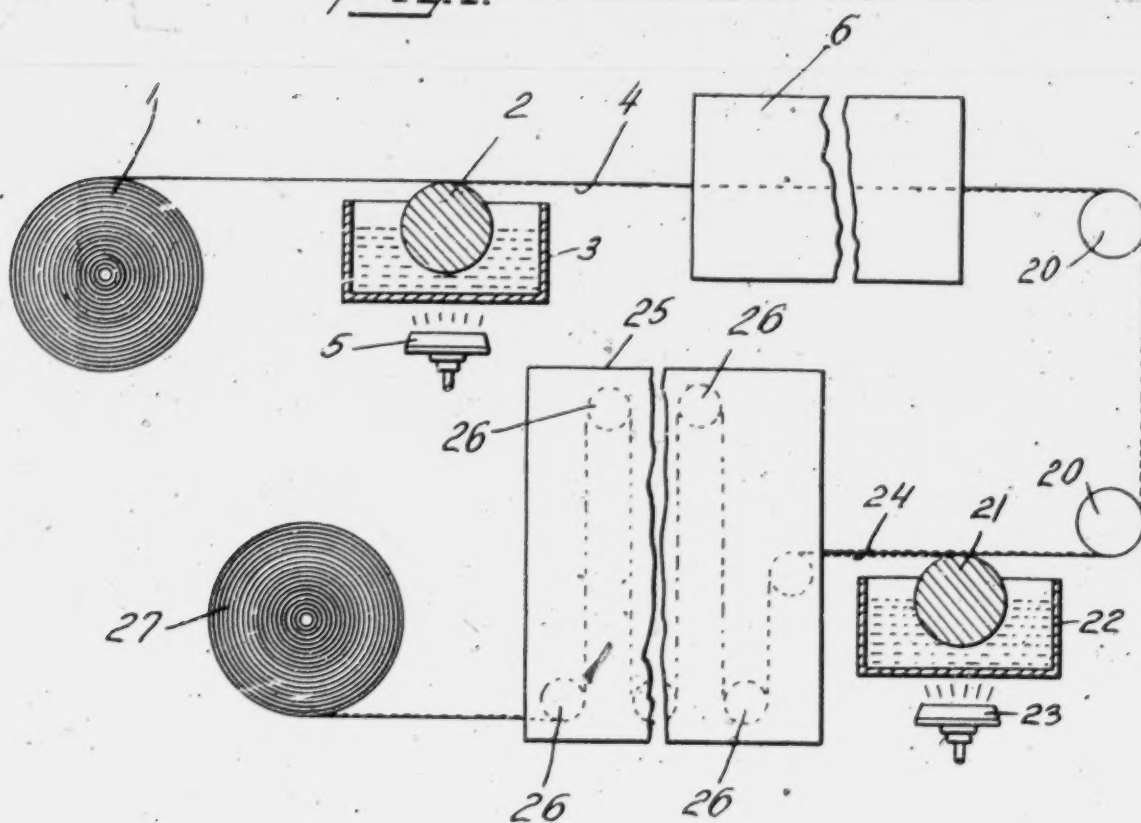
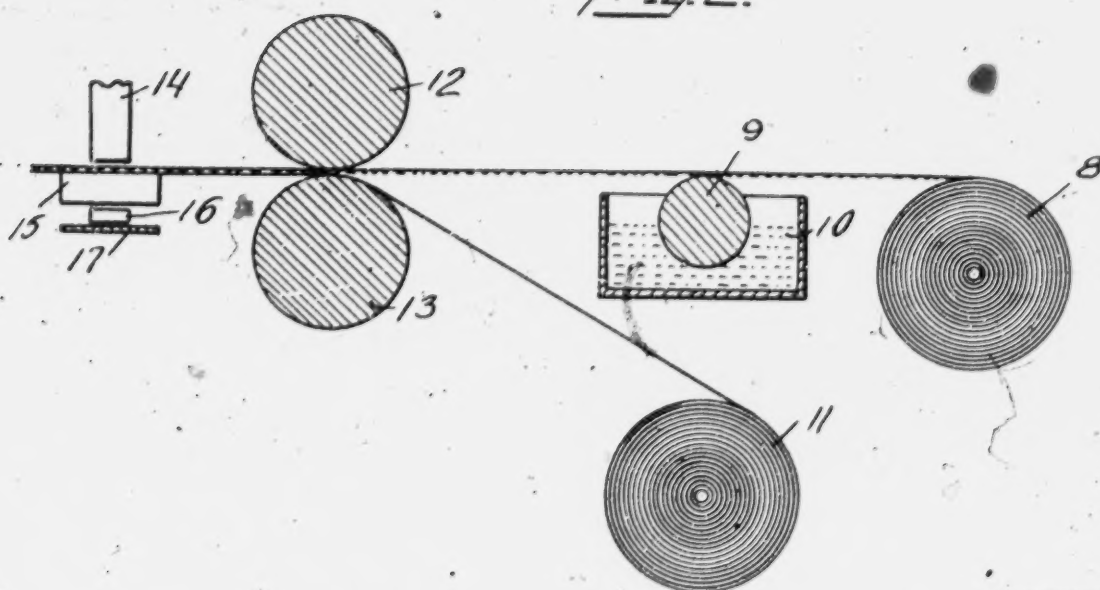
Jan. 31, 1928.

L. G. LANGE

1,657,802

CAP INSULATOR AND MATERIAL AND PROCESS FOR MANUFACTURING THE SAME

Filed Dec. 16, 1924

Fig. 1.*Fig. 2.*

INVENTOR
 Louverm G. Lange

BY
 Parris, Davis, Warner & Edwards
 ATTORNEYS

Patented Jan. 31, 1928.

UNITED STATES PATENT OFFICE.

LOUVERN G. LANGE, OF PASSAIC, NEW JERSEY.

CAP INSULATOR AND MATERIAL AND PROCESS FOR MANUFACTURING THE SAME.

Application filed December 16, 1924. Serial No. 756,909.

In the marketing of preserves, mayon-
 naise, mustard, and merchandise of like char-
 acter, it is customary to use glass bottles
 or jars equipped with metal caps, and in
 order that the contents of the bottle may be
 insulated from the metal and may be kept
 free from exposure to air and dirt, it has
 been customary to line these metal caps
 with composite discs of paper, these discs be-
 ing varnished on the side which contacts
 with the contents of the bottle so that the
 contents will not soak through the paper to
 the metal cap where corrosion might be
 set up.

The present invention relates to improved
 insulating discs and material therefor, and to
 process and sub-processes whereby these
 products are produced.

Fig. 1 is a diagrammatic side elevation
 of apparatus employed in the first portion of
 the process of the present invention, and

Fig. 2 is a similar view of apparatus em-
 ployed in the latter portion in the process
 of my invention.

According to the present standard prac-
 tice the process of making cap insulators
 may be described as follows:

Starting with paper three feet wide and
 in a 500 ft. roll, the paper is varnished on
 one side by being passed over a roller which
 dips into a tank of varnish and thus spreads
 the varnish in an even layer on one side of
 the paper. Papers known to the trade as
 craft paper, express paper or rope paper,
 and with a thickness of from four to six
 thousandths of an inch before being coated
 are suitable for this work. The varnish
 may be a pure quick drying oil varnish and
 may be applied of a thickness of from one
 thousandth to two thousandths of an inch.
 After being passed over the varnishing roll
 the continuous sheet is suspended on a loop-
 and dried with heat. It requires about
 one half hour to dry the paper while it is
 moving in looped form through the drier.
 When varnish is applied to one side of a
 paper sheet in this manner it soaks through
 the sheet to the opposite side. Uncalendered
 paper is ordinarily used.

After the drying above described the
 paper is again wound up in a roll and is

ready for storage, or for distribution to the
 consumer.

A thin varnished sheet as above described
 is not thick enough for successful use as a
 cap insulator. It must be backed up with a
 thicker layer of porous paper or cardboard
 for otherwise the insulator could not be re-
 lied on to make a tight joint between the
 metal cap and the glass container to which
 the cap is attached, usually by screw
 threads.

Inasmuch as the varnish has soaked
 through to the back surface of the paper the
 attachment of such a thick and porous sheet
 of paper or cardboard presents some difficul-
 ties. Machines have been devised for doing
 this work, although these machines are some-
 what complex and expensive, costing in the
 neighborhood of \$2000.00.

In such machines varnished paper in the
 form of a roll is unwound and passed over
 a roller which dips in an adhesive in a tank
 where it is kept hot by a gas flame. Hot
 gum must be used because of the presence
 of varnish in and on the paper sheet. Suit-
 able gums may be made from rosin, glycer-
 ine and non-drying oils which are now avail-
 able at a cost of about 18¢ per pound.

The next step in the old process consists
 in passing the gummed sheet through a pair
 of press rolls where the hot gummed side is
 pressed into intimate contact with a sheet of
 pulp board or news board unwound from a
 roll. This porous backing sheet may have a
 thickness of from twenty five thousandths to
 fifty thousandths of an inch. When the
 continuous sheet comes from rollers it is
 cut into rectangular panels or sheets, say
 three feet square. These panels are then
 stacked and allowed to dry for about two
 days. Discs cannot be punched from them
 immediately after they have been formed
 because the adhesive is still plastic enough
 to "gum up" any cutting dies that might be
 used.

After drying or aging for about two days
 these flat panels or sheets, according to
 standard practice, are placed on a wooden
 chopping block in a crude sort of punch
 press and a hollow die is moved about by
 hand under the platen of the press to punch

discs from the paper panels or sheets. These discs accumulate in the hollow punch from which they ultimately are removed and placed by hand one at a time in the caps where they are to be used, the pulp board face being placed toward the metal.

The foregoing standard practice presents the disadvantages of requiring a relatively expensive machine, a larger storage capacity, at the plant, an expensive adhesive, and considerable skill and experience in the manipulation of hot gum. Even under the best of conditions, blisters will develop in the composite sheet, and finished cap insulators punched therefrom will split apart during subsequent handling and use.

All of the foregoing disadvantages of the old practice are overcome by the process hereinafter described and claimed in detail.

Referring to Fig. 1 of the drawings, the reference numeral 1 designates a roll of kraft paper, express paper or rope paper of any suitable thickness, say .004" to .006". The paper is fed over a roll 2 dipping into a tank 3 and adapted to apply a layer 4 of water soluble gum to one surface of the paper. The gum may be maintained in liquid condition by a suitable burner 5. The continuous sheet is dried in a hot box 6 and is then in condition for the application of the varnish to the opposite face. The gum or adhesive may be of the dextrine type, or may be an animal glue or may be a fish glue.

A layer of quick drying oil varnish may then be applied to the uncoated surface of the paper sheet. The paper passing from the dryer 6 may pass over suitable idler rolls 20 to reverse it and place the gummed surface uppermost. It is then passed over a roll 21 which dips into a tank 22 containing the varnish. The varnish may be maintained at any desired temperature by means of a burner 23. After a coating 24 of varnish has been applied to the paper, it may be delivered through a festooned dryer 25 looping over roller 26 arranged in the top and bottom of a dryer. The paper, coated on both surfaces, may be then wound on a roll 27. This process of varnishing the paper follows the standard practice except that the presence of the water soluble gum on the reverse side of the paper sheet prevents the varnish from soaking through it to the reversed surface.

The layer of varnish so applied can advantageously be from .001" to .002" thick.

Paper assembled in 500 ft. rolls and coated on one side with a good oil varnish and coated on the other side with a water soluble gum can be conveniently transported and is, in itself, a marketable commodity, suitable for convenient shipment to the bottle cap maker or consumer.

The varnished surface may be waxed by

known processes to meet special demands of the trade, paraffin, or any good bread wrapper wax, being used for that purpose. Similarly, when a highly waterproofed cap insulator is desired, the paper may be coated with nitro cellulose and gums such as commercial dammar before the varnish is applied, and the layer of varnish can then be waxed as before.

The next step in my complete process is illustrated diagrammatically in the drawings and consists in unwinding the gummed varnish sheet from roller 8 and passing it over a roller 9, dipping in water 10. While the gummed sheet is still wet with water it is brought into contact with a sheet of pulp board or news board twenty-five to fifty thousandths of an inch thick unwound from a roll 11. The two sheets are passed between rolls 12 and 13 and thus are brought into intimate contact. The composite sheet thus formed, instead of being cut into panels and put in storage for many hours, is immediately passed to a punch press of the battery type comprising a row of plungers 14 and dies 15, whereby the desired discs can be cut simultaneously across the entire width of the composite sheet. The fact that the water soluble gum has been used as the adhesive instead of a hot rosin gum permits this prompt punching of the discs. In commercial practice, it is convenient to deliver the discs through dies 15 directly into bottle caps 16 carried on a transverse conveyor 17. Much hand operation is thus eliminated.

In the practice above described the machine is of simple and inexpensive construction, the adhesive is cheap in cost and easy to manipulate to insure a permanent close adhesion between the two sheets, and there is no need for elaborate storage space in which to age the adhering materials. But equally important, there is a prompt and orderly delivery of the finished discs, right side up in the metal caps in which they are to remain without the intervention of any substantial amount of manual handling.

I claim:

1. In a process of manufacturing cap insulators, the steps which consist in coating one side of a sheet of tough paper with a water soluble gum, then drying the gum, then varnishing the other side of said sheet and drying the varnish, subsequently wetting the gummed surface with water and bringing into contact with the wet surface a porous padding sheet, rolling said sheets together and immediately punching therefrom discs suitable for use as cap insulators, substantially as described.

2. The method which comprises coating one surface of a sheet of tough dense paper with a water soluble gum, then drying the sheet and then coating the other side of said sheet with varnish and drying and waxing

the varnish and rolling said sheet into a roll adapted for convenient storage and shipment, subsequently unrolling said gummed and varnished sheet and wetting the gummed side with water, pressing a porous paper sheet into contact with the wet gummed surface as the paper is unrolled, punching from

the composite sheet so formed discs suitable for use as cap insulators and simultaneously delivering said discs directly into the caps 10 wherein they are to be used, substantially as described.

In testimony whereof I affix my signature.
LOUVERN G. LANGE.

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UNITED STATES PATENT OFFICE

LOUVERN G. LANGE, OF PASSAIC, NEW JERSEY

ADHESIVE BACKING

No Drawing.

Application filed July 3, 1929. Serial No. 375,883.

This invention relates to adhesives and has for its object the provision of certain improvements in the method of applying and using adhesives. More particularly the invention aims to provide an improved adhesive coating for varnished or oiled papers and an improved method of applying the same.

Bottle caps, covers, container sealing devices and the like frequently are provided with a thin strip of yieldable material between the cap itself and the neck of the bottle or jar. This yieldable material frequently is in the form of a thin sheet of natural or composition cork such, for example, as the insert of cork placed within the familiar crimped-on cap of beverage bottles.

In the heretofore customary method of using bottle caps and the like it is frequently necessary or desirable to protect the cork insert from the action of the contents of the bottle or protect the contents of the bottle from the material of the cork insert. This is necessary because when composition cork is used, the binder of the fragments of cork is frequently soluble in the contents of the bottle, thus contaminating the contents of the bottle. The natural cork contains imperfections and whenever the imperfections come in contact with the edge of the neck of the bottle there is a tendency for the contents to leak and the cork insert in the bottle cap fails to seal the contents of the bottle. This makes it desirable to employ some means for protecting the surface of the cork to cover up such imperfections as may occur in the surface adjacent to the edge of the bottle neck.

The cork insert or liner may be protected by a sheet of varnished paper, the unvarnished surface of which is bonded to the cork by a material such as gutta percha. The gutta percha in sheet form may be applied to the unvarnished surface of the sheet of varnished paper and blanks may be stamped from this composite material and applied to the cork insert by hot pressing. I prefer to apply the gutta percha to the varnished paper in liquid form as hereinafter described, for in this manner it is possible to employ sufficient gutta percha to accomplish the desired result without using as much varnished paper, or as

much gutta percha as is necessary when strips, or separate sheets of these materials, are combined as set forth above.

The gutta percha is customarily combined with other gums or substances in order to impart to the gutta percha other desirable properties. Balata gum and various other resins are frequently used for this purpose. Throughout this specification and the appended claim the term gutta percha is used to designate the adhesive material whether it be gutta percha alone or in combination with other substances which may slightly alter its properties.

Clean washed gutta percha may be dissolved in an appropriate volatile solvent such for example as highly refined gasoline, solvent naphtha, toluene, benzene or xylene. This solution is heated until the mass becomes thick and viscid in which state it is applied in a thin layer to the back of the varnished paper and the remaining volatile solvent permitted to evaporate.

This method of applying the gutta percha to the varnished paper permits an evenly distributed coherent layer to be applied of any appropriate thickness. The freshly dried gutta percha backing is preferably covered with talc or soapstone to overcome the tackiness of the fresh gutta percha surface.

The coating of gutta percha in solution in gasoline or other appropriate solvent is spread on the back of the treated paper or fabric in such a manner that after the solvent evaporates there is left as a backing on the treated paper a precipitated layer of gutta percha. The spreading of the solution may be so controlled that substantially any thickness of dried film may be attained. I have found it advantageous to use a finished film of substantially one thousandth (.001) of an inch in thickness with many materials, as this provides an appropriate thickness to give thorough adhesion when the paper is hot pressed on another article.

The film of gutta percha deposited from solution may be treated in any advantageous manner to eliminate the tackiness of the freshly exposed surface. I have found it advantageous to dust the surface thoroughly

with powdered talc. or soapstone. The adhering layer of powdered material does not materially impair the adhesion of the gutta percha film when applied by the hot pressing method for the powdered particles are then incorporated in the body of the melted gutta percha.

The use of varnished paper provides a laminated or multi-ply fabric of great tensile strength, for the film of varnish attached to one side of the paper, the tough fibres of the paper itself and the layer of gutta percha adhering to the back of the treated paper and the other article each provides an element of added strength to the laminated or multi-ply assembly.

The solvent method of applying the gutta percha reduces the cost of the finished fabric not only by appreciably reducing the thickness of the gutta percha film, but also by reducing the cost by providing a more economical method of handling and preparing the materials. The gutta percha may be applied in any appropriate manner, as for example, by spreading, flooding, brushing or spraying.

I have found in the practice of the invention that the type of paper used has a great bearing on the finished material. I have found it advantageous to use a paper which has a high gloss or a polished surface. This type of paper usually has a coating of very fine material which fills in the pores of the paper itself so that the adhesive backing which is appropriately placed on the paper does not absorb into the body of the paper as readily as when one of the softer more open grained papers is used. In other words such paper is heavily sized. Thus the adhesive backing remains for the most part on the surface of the paper and does not penetrate to any large extent into the body of the material. The adhesive backing on this type of paper is thus substantially all available to be used as an adhesive to bind the paper to any other material when it is appropriately applied by means of pressure and heat.

The composite material of the present invention is far superior to any composition, or composite material, heretofore employed as a liner or filler for bottle caps and the like. It is an established fact that even the best grades of varnished paper will absorb moisture to the extent of 12 to 13 per cent and, accordingly, the use of varnished paper in making bottle cap liners, as heretofore suggested, has been a failure. Even though the varnished paper may form an air-tight seal, yet moisture penetrates the varnished paper and attacks the underlying material, and the contents of the container is no longer effectively sealed.

The use of metal foil as a cover for cork-inserts has likewise proved to be unsatisfactory, not alone from the standpoint of the

high cost of the metal foil, but also because the foil is an extremely weak material mechanically and is easily ruptured by any irregularities in the edge of the container, or by excessive pressure applied to the cap or cover enclosing the container. Attempts have been made to provide a soft cushion for the metal foil but such practice is not a satisfactory solution of the problem because of the expense of the cushion material and the fact that such precautions fail to prevent rupture of the metal foil under abnormal conditions. The foil must be very thin in order to be sufficiently flexible to conform to the configuration of the top of the container and it is impossible to make foil complying with such requirements without having the foil very weak mechanically.

The applicant has found that he can eliminate entirely the use of metal foil and at the same time provide a perfect seal for the container. In general this result is accomplished by employing a continuous film of varnish and a continuous film of gutta percha which functions as a waterproof adhesive. Paper, or the like, may have one surface provided with a continuous film of varnish and the other provided with a continuous film of gutta percha and this composite material may be bonded to an underlying layer of cork, or other resilient material. As pointed out above, the paper is preferably heavily sized to insure continuity of the films of varnish and gutta percha. The varnish film is adapted to come in contact with the contents of the container and prevent the contents from coming in contact with the gutta percha film, except in so far as moisture from within the container penetrates the varnish film and reaches the gutta percha. The moisture however cannot penetrate the gutta percha and thus it appears that a perfect seal may be formed.

The penetration and character of the finished adhesive backing is also very largely dependent upon the type of solvents which is used to dissolve the mixed gums. These solvents also have a more or less permanent effect upon the precipitated adhesive. I am not certain whether this difference is due to the fact that certain solvents are retained for a longer period by some of the gums used or whether some of the solvents promote a more thorough and complete mixture of the gums themselves. It would seem more likely that the latter is the true explanation of the difference in the adhesive backings, for it is not likely that all of the gums are equally soluble in a single solvent, but with the mixed solvents there is an intimate mixture of all the gums used. The rate of evaporation of the solvents may have something to do with the physical characteristics of the finished adhesive and by an appropriate mixture of

solvents almost any desired rate of evaporation may be obtained.

I do not wish to confine myself to any specific mixture of gums or solvents for the adhesive backing must be able to take care of a wide range of conditions. These conditions may be atmospheric or temperature conditions, thus a harder adhesive may be made to withstand summer usage or transportation conditions which may be very severe. In shipping the finished material across the United States at certain times of the year, portions of the desert districts in the West are extremely hot and this heat might cause the disintegration or sticking of a very soft or low melting point adhesive.

At certain times the adhesive backed material may be used under very cold conditions. In this case the unwinding of the rolls might cause cracking of the paper itself due to the extreme stiffness of the adhesive backing. Thus it will be seen that the adhesive backing may comprise different gums or different mixtures of gums in order to take care of extreme climatic or thermal changes.

The thickness of the adhesive coating may be varied in order to meet different conditions of use. When the material is to be applied to a very porous medium such as felt, cardboard, or even some grades of cork, it is advisable to use a thicker coating of adhesive than when the adhesive backed material is to be applied to some impervious material in the nature of metal. I have found it advantageous to use an adhesive backing of from .001 to .002 of an inch in thickness, and have found that this thickness of adhesive backing is adequate for average conditions of use although a greater thickness has at times been used in order to meet adverse conditions.

The cost of applying and using an adhesive backing of .002 of an inch in thickness or even greater thickness is less than the cost of using a thin sheet of gutta percha of the same thickness, for the waste in the adhesive backed material is substantially nil. The waste in using the thin gutta percha sheets is considerable because these sheets are delicate and are easily torn in handling, so that it is more advantageous to use a thickness of the same character with the material sprayed on or definitely attached to the paper in the manner of the present invention than it is to use the same thickness of material with sheets of gutta percha.

My improved composite material comprising paper, which has been preferably heavily sized and having a varnished surface and a surface covered with gutta percha, is especially adapted for the purpose of providing liners or inserts for bottle caps, jar covers and the like.

I claim:

As a new article of manufacture, paper

having a high gloss and having a coating of varnish on one surface of the paper and a coating of gutta percha on the other surface thereof.

In testimony whereof I affix my signature.

LOUVERN G. LANGE.

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R. G. KOCH.

COVER FOR BOTTLE CAP CORKS.

APPLICATION FILED SEPT. 21, 1915. RENEWED JUNE 21, 1917.

1,238,156.

Patented Aug. 28, 1917.



Inventor

Reinhold G. Koch,

By Edwin Guthrie,
Attorney

UNITED STATES PATENT OFFICE.

REINHOLD GUSTAV KOCH, OF NEW YORK, N. Y., ASSIGNOR TO SILVER CROWN DISK COMPANY, INC., A CORPORATION OF NEW YORK.

COVER FOR BOTTLE-CAP CORKS.

1,238,156.

Specification of Letters Patent.

Patented Aug. 28, 1917.

Application filed September 21, 1915, Serial No. 51,770. Renewed June 21, 1917. Serial No. 176,949.

To all whom it may concern:

Be it known that I, REINHOLD G. KOCH, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Covers for Bottle-Cap Corks, of which the following is a specification.

This invention relates to covers for bottle cap corks, and is intended to protect and preserve the cork disk from deterioration by exposure to the air, so that for an indefinite period of time the cork remains yielding and to a certain extent elastic. Furthermore, it is intended as an object of this invention to produce, as a new article of manufacture, a cover for bottle cap corks comprising on one surface, termed in this description the outer surface, a layer of metal foil to prevent the contact of the liquid in a bottle with the cork disk. An intermediate sheet of flexible material having a fusible coating of soft rubber on its surface next to the metal foil, and a coating or layer of gutta percha on its other or inner surface, is caused by suitable heating to adhere to the foil and to the cork disk, as more fully hereinafter set forth.

The accompanying drawings illustrate the construction and arrangement of the elements of this invention. Figure 1 represents a bottom or plan view of an ordinary bottle cap provided with a cork disk. Fig. 2 is a cross-section of a bottle cap, the cork disk of which is protected by this invention. Owing to the fact that the paper intermediate sheet, the coating of adhesive and elastic materials thereon, and the metal foil outer layer, are each relatively very thin, and cannot be adequately illustrated in a drawing such as Fig. 2 of actual size, a descriptive view, Fig. 3, is introduced to show the various elements of this invention. Fig. 3 shows a cross-section of a bottle cap, to the cork of which this invention is applied, and the scale of drawing has been considerably increased. Fig. 4 is a vertical section of the neck of a bottle, the mouth of the bottle being closed by means of a bottle cap provided with this invention, and shown in cross-section.

Throughout the drawings and description, the same letter is employed to refer to the same part.

Considering the drawings, the metal cap 55 A is provided with the usual cork disk *a*. It is advantageous to place in the shells or metal caps A, a mixture of tartaric acid, gum arabic and rosin, which when heat is applied acts to stick the cork disk to the 60 cap. The layer of adhesive for that purpose in Fig. 3 of the drawings is marked by the reference letter B.

As best set forth in the descriptive illustration Fig. 3, there are shown below the 65 cork disk *a*, four layers of material. The layer C immediately next to the lower surface of the cork is gutta percha. The second layer from the cork is the intermediate sheet of tough paper. I do not limit myself 70 to the use of any particular kind of paper, but, prefer tough paper with some absorbent and elastic quality. The reference letter D marks the intermediate paper sheet. The third sheet from the cork disk is a layer of 75 soft vulcanized rubber E, and the surface sheet is tin foil or other metal foil F. When the four layers of material are properly arranged as described and placed in an oven and heated to a point below that of boiling 80 water, the gutta percha and rubber soften and will adhere to and protect the cork disk. The gutta percha also adheres to and partly permeates the paper sheet. The soft vulcanized rubber also softens by the heat, ad- 85 hering to the paper sheet and to the tin foil outer surface. It will be noted that the intermediate paper sheet which forms the body layer of this invention is in itself absorbent or interstitial and more or less com- 90 pressible. It will also be observed that the adhering layer of soft rubber and the fusible layer of gutta percha are insoluble in water. It has been stated that the metal foil is the outer layer, and directly covers the 95 mouth of the bottle.

When the cork and the different layers mentioned are arranged as shown in Fig. 3, and all heated together, the top of the cork is protected by the cap, and its lower sur- 100 face is fully covered and shielded from the air. The rubber layer E, protected as it is by the tin foil, remains soft and yielding for an indefinite period of time, and when the cap provided with this invention is ap- 105 plied to the mouth of a bottle G, the yielding rubber layer acts to prevent the tin foil from being torn by the usual capping pres-

sure, although the covering as well as the cork are necessarily distorted as shown in Fig. 4.

In practice it has been found that a very large proportion of the cork disks used are defective, either by reason of natural perforations or failure of the substance of the cork through age or other causes. It sometimes happens that the cork disk has a disagreeable taste or odor, which is communicated to the contents of the bottle, particularly, if the bottle has been closed by the cap for some time. By the use of this invention, the metal foil surface F is directedly against the mouth of the bottle and exposed to the liquid within it. There is neither taste nor smell from the metal foil no matter how long the bottle remains capped, and, even if the cork disk is a bad one its ill effect cannot reach the interior of the bottle.

While cork is mentioned as the impervious member or layer of the composite disk for bottle caps herein specified, any selected substitute for cork may be used as the body of the disk, provided the outer layer of metal foil is adequately protected against rupture by a sufficient backing layer or layers of yielding material substantially as set forth.

Having now described this invention together with its operation and use, I claim:—

1. As a new article of manufacture, a cover for bottle cap corks, comprising an outer surface layer of metal foil, an intermediate sheet of flexible non-metallic material, a layer of elastic material arranged between the said foil and intermediate sheet and adhering to both, and a layer of gutta percha upon the exposed side of the intermediate sheet.

2. As a new article of manufacture, a disk for the interior of a bottle cap, comprising an outer layer of metal foil, an insoluble

layer of soft vulcanized rubber arranged next to the metal foil and adhesively attached thereto, a body layer of flexible and compressible material arranged next to the said rubber layer, and the rubber layer being adhesively attached to the said body layer, and a layer of fusible adhesive material arranged next to the other side of the said body layer and adhesively attached thereto.

3. As a new article of manufacture, a cover for bottle cap corks, comprising an outer surface layer of metal foil, an intermediate sheet of flexible material, an adhesive coating of soft rubber connecting the said sheet and metal foil, and a fusible coating or layer of gutta percha applied to the inner side of the said sheet.

4. As a new article of manufacture, a cover for bottle cap corks, comprising an outer surface layer of metal foil, an intermediate sheet of paper, an adhesive coating of soft rubber connecting the said sheet and the metal foil, and a fusible coating or layer of gutta percha applied to the other side of the said sheet.

5. As a new article of manufacture, a disk for the interior of a bottle cap, comprising an outer layer of metal foil, an insoluble layer of soft vulcanized rubber arranged next to the metal foil and adhesively attached thereto, a body layer of absorbent and compressible material arranged next to the said rubber layer, and the said rubber layer being adhesively attached to the said body layer and partly absorbed thereby, and a layer of fusible adhesive material arranged next to the other side of the said body layer, the said fusible material being adhesively attached to the said body layer and partly absorbed thereby.

In testimony whereof I affix my signature.

REINHOLD GUSTAV KOCH.

UNITED STATES PATENT OFFICE.

FREDERICK W. FARRELL, OF BROOKFIELD, MASSACHUSETTS, ASSIGNOR TO WILLIAM MACLAURIN, OF BROOKFIELD, MASSACHUSETTS.

SEALING-STRIP.

1,358,834.

Specification of Letters Patent.

Patented Nov. 16, 1920.

No Drawing.

Application filed December 22, 1916. Serial No. 123,471.

To all whom it may concern:

Be it known that I, FREDERICK W. FARRELL, a citizen of the United States, residing at Brookfield, in the county of Worcester and State of Massachusetts, have invented an Improvement in Sealing-Strips, of which the following is a specification.

This invention has reference to an improved sealing strip, tape, or member.

In carrying this invention into practice my attention has been directed particularly to the production of a strip, tape, stay, member having adhesive material specially adapted for the sealing of cartons, cases or containers of various kinds, but useful to secure together any two articles or parts of the same article. It being one of the objects of the invention to provide said strip, tape or member with an adhesive material which avoids the objections to the sealing tapes or members heretofore used.

It is well known that in the art of packaging articles and material by the use of cartons or containers made of fiber board or somewhat similar manufactured board it is the custom to secure the closure flaps or parts of said cartons or containers by means of strips of paper adhesively secured in place to bind or bridge edges of said flaps or parts whereby to secure said flaps or parts to one another or to some adjacent part of the carton or container. One method of securing said strips of paper or tapes has been to coat the same with glue which became hard and non-sticky or non-tacky when dry whereby the coated strips or tapes could be rolled into rolls convenient for transportation and for handling by machines in the course of their application to the cartons or containers. Usually, as a step immediately preceding the application of these strips or tapes, it has been customary to pass such strips or tapes through moistening devices to supply moisture to the glue or render the same tacky or capable of adhering to the surface to which the strip was applied.

In the course of procedure just above briefly described it has been found difficult to exactly control or determine the amount of moisture supplied to the adhesive and usually it is found that if an undue amount of moisture is supplied the surplus moisture either is distributed over the machinery, which is objectionable, or said surplus moisture unduly dissolves the glue which mili-

tates against its adhesion. It is also found that said glue is unduly expensive.

The purpose of the present invention in its more specific aspect is to provide a tape, strip, member or material having a coating of an adhesive material which can be rendered tacky without the application thereto of moisture whereby injury to the machinery is avoided and the affixing of the tape, strip, member or material to the carton or container is rendered more positive. The alternative to the use of moisture or liquid of some kind to render the adhesive of said tape, strip, etc., tacky is the use of an adhesive which, normally non-tacky, becomes tacky under a suitable increase in temperature.

The use of rubber, gutta percha, gums and other somewhat similar materials for this purpose is at present inexpedient because of their cost.

After considerable experimentation with materials of a nature to become or to remain tacky without the use of moisture I find that Trinidad asphalt is well suited for the purpose and when applied as a thin coating to a strip or sheet of paper can be utilized as an extremely strong adhesive to secure said strip or sheet of paper to another paper article particularly when the adhesion of said parts is effected under heat and pressure. I find further however that such asphalt after its application to the strip, tape or member will not harden but will remain somewhat tacky whereby the handling of said strip, tape, etc., is so difficult as to be almost impracticable and the rolling of said sealing strip, tape, etc., will not be practical because the asphaltic coating will adhere to the clean surface of said strip in the winding and prevent unwinding of the same. I am of course aware of the use of various non-adhesive coatings of loose material supplied to paper having asphaltic coatings to prevent the sticking of said coatings when wound but such loose material is not desirable and the cost of such materials is prohibitive.

In further experimentation I find it practical from all points to so load the Trinidad asphalt with an inert substance preferably of a mineral nature as to reduce the tackiness of the asphalt under ordinary temperatures so that it can be readily handled without unduly adhering to parts coming in contact therewith while under an abnormal tem-

perature said asphalt will become sufficiently tacky to effect the desired adhesion and thereafter will not be affected by moisture.

I carry out my invention by subjecting the refined Trinidad asphalt to a temperature of approximately 350° F. and gradually supplying thereto dry powdered clay in proportions of about one part of clay to two parts of asphalt and thoroughly mix the same. I have however used a greater proportion of the clay or mineral than that named and have obtained good results therefrom in a mixture of six or seven parts of clay to ten parts of asphalt. The adhesive thus produced is applied as a very thin coating to a base of paper or other fabric or material and some portion of said coating may partially enter and unite with the surface structure of said base paper, fabric or material without saturating the same as the back of said base should be clean and free from adhesive. Usually said adhesive is applied to comparatively wide strips or webs of the paper, fabric or material which latter is then preferably cut into narrow strips or tapes adapted for economical and convenient use. When said adhesive coating becomes dry the strips or tapes may be wound into rolls without the layers thereof sticking together.

In some cases when a comparatively small proportion of clay is used or when the asphalt is unduly tacky I find that it is desirable to reduce the tackiness of the surface of the adhesive after its application to the paper. When this latter course is desirable or necessary I prefer to apply to the surface of the adhesive a quantity of clay or similar inert mineral matter and apply a slight friction or rubbing thereto whereby the fine particles of said clay become mechanically incorporated with or received by the asphaltic surface of the adhesive and the superficial tackiness of said surface is reduced or neutralized without materially reducing the adhesive quality of the coating when subjected to a suitable heat.

The improved sealing tapes or strips are used by placing the same with the coated surface in contact with the surface to which said strip or tape is to be affixed and applying heat and pressure to the back or uncoated surface of the strip or tape. This heat and pressure need not be applied simultaneously as the tape or strip may be subjected to heat to render the adhesive tacky or semi-fluid slightly prior to the placing of

the tape or strip in position on the article to which it is to be affixed and thereafter, before the adhesive becomes set, pressure may be applied to said tape or strip to spread the adhesive and, to some extent, to force said adhesive into the surface structure of the article to which said tape or strip has been thus applied.

As the improved adhesive is not materially affected by moisture in the atmosphere its adhesive binding qualities remain practically permanent after application.

In addition to its use as a sealing tape or strip to seal or secure two adjacent flaps or parts of a carton, container or wrapper, said adhesive strips or members may be used as corner stays for boxes or other stays or reinforcing members. Said adhesive strips may be used to secure together or bridge the adjacent edges of two pieces of veneer or of any other members or articles.

It is to be understood that the inert material used to neutralize or load the asphalt should be of such extreme fineness as to its particles that said particles neither individually nor collectively will prevent any material area or quality of the asphalt from reaching the surface to which said asphalt is intended to adhere when said asphalt is subjected to a suitable temperature. I do not therefore intend to claim herein, as such inert material, the use of sand, powdered soap stone or other flaky mineral substance.

Having thus described my invention I claim as new and desire to secure by Letters Patent:

1. A sealing strip of the character described, comprising a strip of paper and coating of asphaltum on said paper, said coating containing a sufficient proportion of pulverized mineral matter to render the asphaltum non-adhesive at normal temperatures but enabling the coating to become adhesive upon the application of heat thereto.

2. A sealing strip of the character described, comprising a strip of paper, a coating on said strip of asphaltum and pulverized mineral matter, the exposed surface of said coating having pulverized mineral matter, rubbed thereinto to render the surface of said coating non-adhesive at normal temperatures, but permitting said coating to become adhesive upon the application of heat thereto.

FREDERICK W. FARRELL.

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PAGE

(No Model.)

D. W. JOHNSON.
SEALING DISK FOR JARS, &c.

No. 408,177.

Patented July 30, 1889.

FIG. 1.

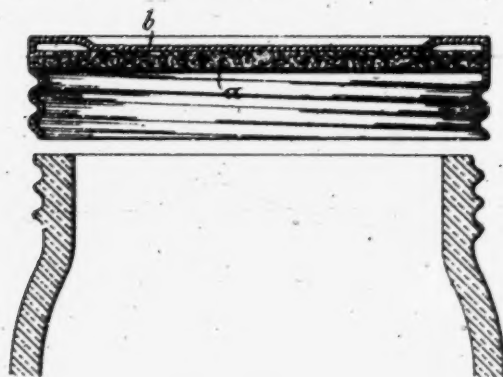


FIG. 8.

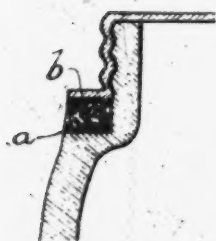


FIG. 2.

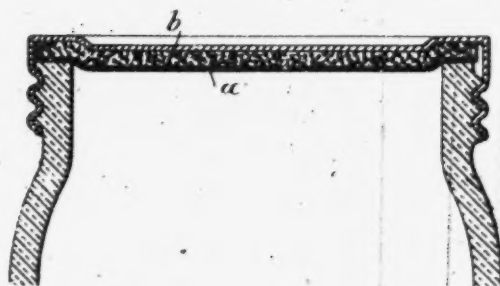


FIG. 3.

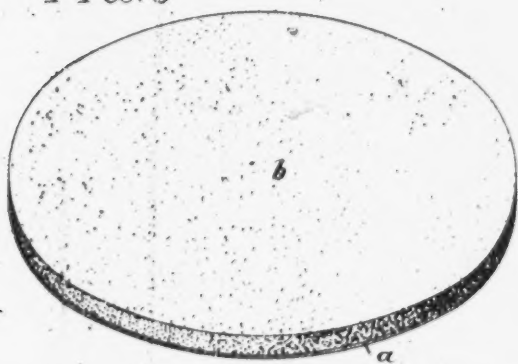


FIG. 4.

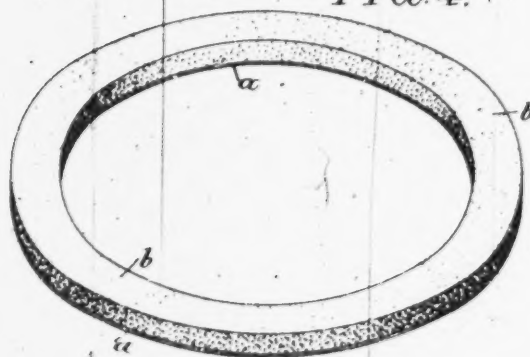


FIG. 5.

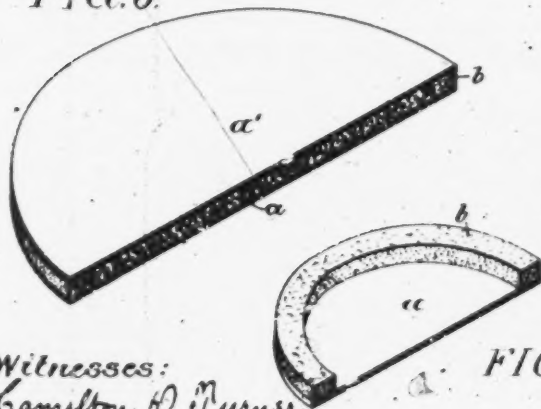


FIG. 7.

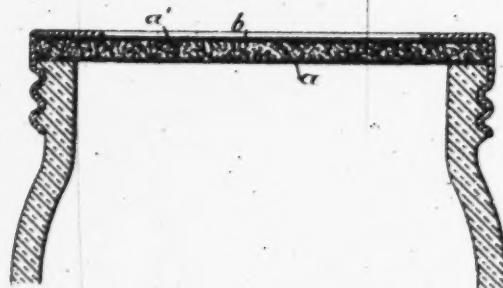


FIG. 6.

Witnesses:
Hamilton D. Turner
William D. Barnes

Inventor:
Daniel W. Johnson
by his Attorneys
Hosmer & Hosmer

UNITED STATES PATENT OFFICE.

DANIEL W. JOHNSON, OF PHILADELPHIA, PENNSYLVANIA.

SEALING-DISK FOR JARS, &c.

SPECIFICATION forming part of Letters Patent No. 408,177, dated July 30, 1889.

Application filed February 18, 1889. Serial No. 300,095. (No model.)

To all whom it may concern:

Be it known that I, DANIEL W. JOHNSON, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Sealing-Disks for Jars, &c., of which the following is a specification.

The object of my invention is to provide a simple and effective sealing-gasket for jars, bottles, boxes, and like receptacles.

In the accompanying drawings, Figure 1 is a sectional view of the upper portion of a jar with a detached cap having my improved sealing-gasket in position therein. Fig. 2 is a sectional view showing the jar sealed. Fig. 3 is a perspective view of the gasket. Figs. 4, 5, and 6 are views of other forms of gasket embodying the invention; and Fig. 7 is a sectional view showing the gasket, Fig. 5, in position on a jar. Fig. 8 is a view showing the gasket or ring on the outside of the jar-mouth.

Disks or washers for sealing-jars and other vessels having removable lids, and which are required to be air-tight, have usually been made of rubber, leather, or paper; but I have found by experiments that neither of these will keep the vessel absolutely air-tight. Of the three rubber is to be preferred; but this deteriorates and loses its elastic properties, and if used as a seal in direct contact with the articles to be preserved often taints them. Leather is also objectionable on the same account, and paper has not sufficient elasticity to make a tight joint.

I have found by experiments that by making a water-proof sealing-gasket of parchment or parchmented fiber, or their equivalents, secured to a felted body, I am enabled to hermetically seal the vessel, while at the same time the parchment will have no deteriorating effect upon the contents of the vessel.

Referring to Fig. 3, *a* represents a disk of parchment or parchmented fiber, which is impervious to moisture, and to which is cemented in any suitable manner a disk *b*, of any suitable felted material—such as wool, paper, &c.—providing a soft and elastic backing for the parchment. This combined felt and parchment washer is placed in the cap of a jar, as in Fig. 1, for instance, and when the

cap is screwed into position, as in Fig. 2, the felt between the cap and the seat around the mouth of the vessel will be tightly compressed, making an air and water tight joint, while at the same time the contact of the contents of the vessel with the parchment will not injuriously affect said contents.

In Fig. 4 I have shown the gasket in the form of a ring, which is used in the same manner as a rubber ring, being, for instance, seated on the shoulder of a jar, as shown in Fig. 8.

Fig. 5 shows a gasket with parchment or parchment-paper disks *a a'* on both sides and felted material *b* between the two outer disks, this form of gasket being particularly available for use with a cap having an open center, as shown in Fig. 7. The disk *a'* (shown in Fig. 5) may be of plain paper—that is to say, paper not waterproofed—so that a label can be readily pasted thereon.

In Fig. 6 I have shown a disk *a*, of parchment or other water-proof material, having secured to it a ring *b*, of felt, this ring being in such position as to be compressed between the cap and the seat around the mouth of the vessel, the center portion of the disk *a*, of water-proof material, being merely for the purpose of preventing the contents of the jar from coming in contact with the lid.

It will be understood that in place of the felt, as shown, a soft yielding woven fabric may be used; but I prefer in all cases to use the felt.

I claim as my invention—

1. A sealing-gasket for jars or other vessels, having a base of water-proof material backed with and secured to a felted material, substantially as described.

2. A sealing-gasket consisting of a body of felted material having water-proof material secured to its opposite faces, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL W. JOHNSON.

Witnesses:

WILLIAM D. CONNER,
HENRY HOWSON.

1139

C. R. KEERAN.
TOP FOR JARS.
APPLICATION FILED MAR. 31, 1909.

957,064.

Patented May 3, 1910.

Fig. 1.

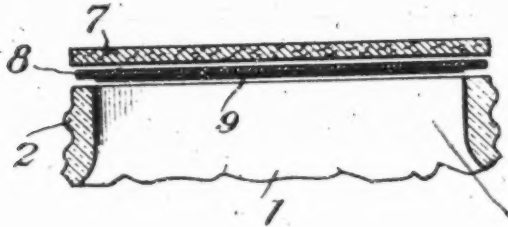


Fig. 2.

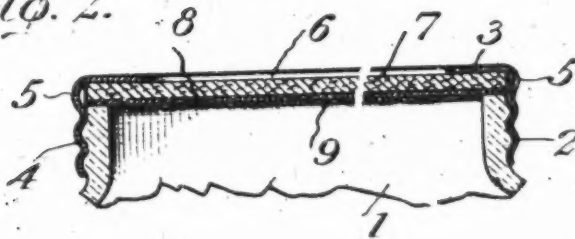


Fig. 3.

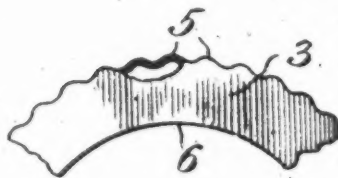
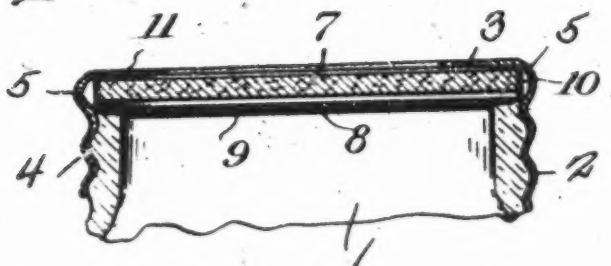


Fig. 4.



Inventor

Charles R. Keeran

Witnesses

Fenton Belt.

C. C. Hines.

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

CHARLES R. KEERAN, OF BLOOMINGTON, ILLINOIS.

TOP FOR JARS.

957,064.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed March 31, 1909. Serial No. 488,899.

To all whom it may concern:

Be it known that I, CHARLES R. KEERAN, a citizen of the United States, residing at Bloomington, in the county of McLean and State of Illinois, have invented new and useful Improvements in Tops for Jars, of which the following is a specification.

This invention relates to a seal or closures for fruit jars and other bottles, jars and similar containers.

The main object of the invention is to provide a closure of the screw cap and sealing disk type in which an improved construction of seal is employed to hermetically close the bottle or jar without undue compression of the seal.

Another object is to provide a seal which is inexpensive of construction and free from the objections incident to the use of rubber seals, and which obviates the necessity of employing enameled or porcelain-lined caps in order to prevent corrosion, thus decreasing the cost of manufacture.

Still another object is to provide a seal having improved means for maintaining a waxed disk out of contact with the cap, whereby the cap is prevented from becoming fastened to the jar by the wax and is adapted to be removed without first heating the jar to melt the wax.

In the accompanying drawing:—Figure 1 is a vertical section through the neck of a jar showing the seal in position for application. Fig. 2 is a similar view showing the neck sealed by the seal and cap. Fig. 3 is a top plan view of a portion of the cap partially broken away. Fig. 4 is a sectional view through the seal as employed in conjunction with a flanged guard ring.

Referring to the drawing, 1 designates the neck of a jar, bottle or other container having external screw threads 2, and 3 designates a metal cap having a threaded flange 4 to engage said threads 2, above its threads the flange of the cap is formed with comparatively coarse external corrugations 5, providing a milled grip for convenience in applying and removing the cap, and which corrugations also serve an additional function, as hereinafter described. The construction of seal employed allows a cap having an open center top to be employed without detriment, i. e., a top having an

opening 6 and consisting simply of a circular rim.

The seal employed in conjunction with the cap comprises an upper disk or liner 7 and a lower disk or liner 8. The disk 7 which forms a yielding backing for the disk 8, is formed of comparatively soft pulp board or its equivalent, while the disk 8 is composed of some soft porous material, such as blotting paper saturated with sealing wax, rubber or any of the compositions of the latter which melt at a temperature somewhat higher than normal atmospheric temperature. The disks 7 are coextensive in diameter with each other and with the internal diameter of the milled portion of the cap and external diameter of the rim edge of the neck 1. Both disks are thus adapted to fit snugly within the upper portion of the cap with the disk 7 bearing against and closing the opening 6 in the top of the cap, so that the disk 8 may rest upon the rim edge of the neck with the edges of both disks flush with the outer surface of said neck. To the under side of the disk 8 is secured a steam and water-proof disk 9 of oiled paper or any suitable material which is coextensive in diameter to the internal diameter of the neck and is adapted to fit within and bear peripherally against the same.

In use, the fruit or other substance to be preserved is poured while hot into the jar, the disks placed upon the edge of the neck as shown, the cap screwed on as far as it will go easily, and the jar allowed to stand a few minutes. The heat from the contents of the jar will soften the wax or other equivalent material saturating the disk 8, and then the cap is screwed on tightly thus embedding the rim of the neck in the waxed disk, by which a perfect hermetic seal is secured. In this operation the disk 7 will also be caused to adhere to the disk 8 by the wax, and the latter named disk will adhere so strongly to the neck that the cap may be removed and the vessel inverted and roughly handled without breaking the seal. In putting up cold goods, the waxed disk is heated in some other suitable manner prior to application and the cap screwed fully on. The disk 9 not only prevents any portion of the fused wax from entering the jar but also prevents contact of the contents

of the jar with the disk 8, and coöperates with the latter to form a more perfect seal.

It will be observed that the disks 7 and 8 completely close the joint between the neck and cap, so that no portion of the contents of the jar can come into contact with the cap. Hence, the necessity of employing an enameled or porcelain-lined cap to prevent corrosion is obviated with resulting economy. By forming the outwardly projecting corrugations on the cap the edges of the disks are allowed to lie flush with the exterior of the neck, so that they finally cover the rim edge thereof. Of course, this could be accomplished by making the cap smaller at the top and leaving off the corrugations. However, if this were done, when a wax seal is used the cap would become sealed so tightly that it would almost defy removal without heating, but even though some of the wax will stick the edges of the disks 7 and 8 to the inside points of these corrugations the portions of the wax will break loose much easier when it is desired to unscrew the cap. It will also be observed that by using a seal of the character described, the necessity of compressing the seal to an objectionable degree by a very tight screwing on of the cap as is necessary in using ordinary paper or rubber gaskets, is avoided with manifest advantages, and accordingly the cap may be made of thinner metal and with an open center, as before described, as a very strong cap is not necessary. The cost of producing the cap is therefore decreased without impairing the strength of the seal.

If desired, the annular rim or top of the cap may be depressed by inclining it slightly downward toward the opening 6, as shown in Fig. 2, thus adapting it to more effectually confine the center of the seal and sustain it against any internal pressure.

The name or trade-mark of the manufacturer or any desired printed matter may be suitably arranged on the disk 7 for display through the opening 6.

If desired, a guard ring 10 of metal or other preferred material may be provided to inclose the edges of the disks 7 and 8 said ring having an inturned flange 11 to project over upon the upper surface of the disk 7, so as to prevent contact between said disks and the cap and sticking of the disks to the cap by the sealing wax or other material. This will obviate the necessity of heating the cap to soften the wax to allow the cap to be removed and enable a cap without the corrugations to be used if so desired. Hence the cap may be easily screwed off and the seal cut away by a knife without injury or heated to soften the wax, when it may be easily removed.

Having thus fully described the invention, what I claim as new is:—

1. A closure for receptacles comprising an inner sealing disk of compressible material saturated with a sticky fusible material and adapted to rest directly upon the rim of the receptacle, an outer sealing disk backing the same, and a cap to inclose said disks and adapted to engage the receptacle.

2. A closure for receptacles comprising a sealing disk of porous compressible material saturated with a sticky fusible substance, said disk adapted to rest directly upon the rim of the receptacle, and a cap to inclose said disk and adapted for engagement with a receptacle.

3. A closure for receptacles comprising an inner sealing disk of porous compressible material saturated with a sticky fusible substance, and adapted to rest directly upon the rim of the receptacle, an outer sealing disk of compressible material backing said inner disk, and a cap inclosing said disks and adapted for engagement with a receptacle.

4. A closure for receptacles comprising an inner sealing disk of porous compressible material saturated with a sticky fusible substance and adapted to rest directly upon the rim of the receptacle, an outer sealing disk of compressible material backing said inner disk, a moisture-proof disk upon the inner face of said inner disk and of less diameter than the same, and a cap to inclose said inner and outer disks and adapted for engagement with a receptacle.

5. A closure for receptacles comprising a cap having an open center top and a threaded flange, the wall of the top being inclined inwardly and downwardly, an inner disk of porous compressible material saturated with a sticky fusible material and adapted to fit within the cap and rest directly upon the rim of the receptacle, and an outer disk of compressible material adapted to fit within the cap and to bear against said inclined wall.

6. A bottle seal comprising a cap having a flange threaded at its lower portion and provided above the threads with annular corrugations, an outer sealing disk formed of soft compressible material having its peripheral edge contacting with the corrugations, and an inner sealing disk coextensive in diameter with said outer sealing disk and composed of a porous material saturated with a sticky fusible substance and adapted to rest directly upon the rim of the receptacle.

7. A bottle seal comprising a cap having a flange threaded at its lower portion and provided above the threads with annular corrugations, the top wall of the cap being formed with a central opening and being inclined inwardly and downwardly toward said opening, an outer sealing disk formed of soft compressible material having its pe-

ripheral edge contacting with the corrugations and an inner sealing disk coextensive in diameter with said outer sealing disk and composed of a porous material saturated with a sticky fusible substance and adapted to rest directly upon the rim of the receptacle.

8. A bottle seal comprising a cap having a flange threaded at its lower portion and provided above the threads with annular corrugations, an outer sealing disk formed of soft compressible material having its peripheral edge contacting with the corrugations, an inner sealing disk coextensive in diameter with said outer sealing disk and composed of a porous material saturated with a sticky fusible substance and adapted to rest directly upon the rim of the receptacle, and a waterproof disk secured to the lower face of said inner sealing disk and of less diameter than the same.

9. A bottle seal comprising a cap having a flange threaded at its lower portion and provided above the threads with annular corrugations, the top wall of the cap being formed with a central opening and being inclined inwardly and downwardly toward said opening, an outer sealing disk formed of soft compressible material having its peripheral edge contacting with the corrugations, an inner sealing disk coextensive in diameter with said outer sealing disk and composed of a porous material saturated with a sticky fusible substance and adapted to rest directly upon the rim of the recep-

tacle, and a water-proof disk secured to the lower face of said inner sealing disk and of less diameter than the same.

10. A seal for receptacles comprising a cap containing a porous disk saturated with a fusible material and a guard between said disk and the walls of the cap.

11. A seal for receptacles comprising a cap containing a porous disk saturated with a fusible material, and a flanged guard between said disk and the walls of the cap.

12. The combination with a receptacle having external screw threads, of a cap having a flange formed at its lower portion with engaging threads and between said threads and its crown portion with outstruck corrugations, a porous disk disposed within the cap and resting directly upon the rim of the receptacle and saturated with a sticky fusible material, a second disk arranged between said porous disk and the crown of the cap, said disks having their peripheral edges terminating in line with the outer edge of the rim of the receptacle and arranged to face the corrugations of the cap, and a waterproof disk on the under side of the porous disk and disposed within the mouth of the receptacle.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES R. KEERAN.

Witnesses:

F. E. BAILEY,
IRMA BUFFHAM.